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Atomic Power and the Public Interest†

By RICHARD A. TYBOUT*

THE United States is currently building 89 nuclear reactors: 43 for experiment and training, 46 for power production.[1] Thirty-six of the 46 reactors are for military propulsion, especially of submarines; eight are for civil electric power generation, one is for the propulsion of a merchant ship and the last power reactor is for export. The nuclear age is upon us and an interesting age it is from the economic standpoint. For none of these reactors will produce power at a cost nearly as low as that from conventional fuels.

The most promising applications of commercial atomic power are in large stationary plants, as for the generation of 100,000 kilowatts or more of electricity. Such plants designed and constructed over the next few years are expected to produce power at one-and-a-half to three times the fully allocated costs of electricity from conventional power plants.[2] Small nuclear power plants, of which several are included in the above list, are not as well developed economically but are expected to have costs two or three times as high per kilowatt-hour as the large atomic plants.[3] Other uses of atomic power are in prospect for industrial process heat and central district space heating but the costs in these areas are speculative at the present time.

The best estimate of atomic power costs in merchant ship propulsion is provided by Admiral H. G. Rickover, Chief of the Atomic Energy Commission's Naval Reactors Branch. He indicates that our first merchant ship may have a capital cost seven times that of an equivalent horsepower oil-fired plant and about 50 times the cost of fuel oil for equal shaft-power generation.[4] Within five years, Admiral Rickover expects that nuclear fuel costs can be reduced to 15 or 20

† The material presented in this article was originally prepared for presentation at the 1958 meetings of the Midwest Economics Association, Des Moines, Iowa, April 19, 1958.

* Department of Economics, The Ohio State University, Columbus, Ohio.

[1] Details are given in U. S. Atomic Energy Commission, *Progress in Peaceful Uses of Atomic Energy* (Washington, D. C., Government Printing Office, January, 1958), p. 137.

[2] See the author's "Atomic Power and Energy Resource Planning," in *Federal Expenditure Policy for Economic Growth and Development*, Joint Economic Committee Print, 85th Congress, 1st Session (November 5, 1957), pp. 758-60 for a discussion of the most recent estimate and for references to earlier estimates.

[3] See discussion by S. H. Robock, *Nuclear Power and Economic Development in Brazil* (Washington: National Planning Association, 1957), pp. 57-61. Robock's data for small plants in the United States were obtained from manufacturers' estimates, except in one case, which was based upon operation of a test facility.

[4] See Panel on the Impact of the Peaceful Uses of Atomic Energy, *Peaceful Uses of Atomic Energy*, Vol. 2, Joint Committee on Atomic Energy, 84th Congress, 2nd Session (January, 1956), p. 241.

times those of fuel oil.[5] Atomic power is completely ruled out for such small mobile vehicles as the automobile and for house heating in small individual home units.

What, then, is the purpose of building and operating so many atomic power reactors? The military reactors need only brief comment. Atomic power offers the logistic advantage of long-range operation without refueling and, in the case of submarines, there is the additional fact that nuclear power requires no chemical combustion and hence no oxygen. The civil power reactors open far-reaching economic questions. If they can be economically justified, it must be through long-run benefits from the use of atomic power as a supplement in the world's energy economy.

Long-Run Benefits

It can be shown by energy resource and consumption projections that, even before the end of the twentieth century, four important world regions will experience difficulty achieving reasonable growth objectives on the basis of home supplies of conventional mineral fuels. These are neutral Asia (excluding the Soviet Union, China, and the Middle East), Africa, South America (after exhaustion of oil reserves) and Oceania.[6] Western Europe, the world's historic coal exporting region, is facing increasing difficulty in keeping coal production abreast of needs and is completely dependent upon imports for fluid fuels.[7] Only North America, the Soviet Union and China will be free of energy resource restrictions on economic growth by year 2000 A. D. In the United States even this will be achieved only by hydrogenation of coal to satisfy our heavy demand for fluid fuels.[8]

[5] *Ibid.*, p. 242.
[6] Tybout, *op. cit.*, supra, note 2, pp. 736-50.
[7] *Ibid.*, pp. 749-50.
[8] *Ibid.*, pp. 749-50.

Two general alternative energy sources are available: atomic power and replaceable energy resources. Replaceable energy resources include falling water, vegetable matter, solar energy and others, all of which account for about 20 percent of world energy consumption today, mostly in the form of fuel wood and farm wastes.[9] In the United States replaceable energy resources account for only 3 percent of energy consumed today[10] but this may be expanded to 10 percent or more through increased use of solar energy for space heating and other developments by the year 2000.[11] Some additional contribution may be made by improvements (great improvements are required) on the carbon-fixing processes of nature while improved collection and storage devices for solar energy could be important especially for underdeveloped countries. In the absence of unforeseen technological advances, renewable energy resources are expected to furnish no more than 10 or 15 percent of the world's energy by year 2000.[12]

Atomic power offers a new avenue for at least a partial solution of the world's energy needs. If we find that fissionable materials regeneration can be economically achieved, world fuel resources will be multiplied ten or twenty times beyond economically recoverable estimates of fossil fuels.[13] But the high promise of this finding must be qualified by the fact that fissionable fuels cannot take the place of coal, oil and gas in certain important present uses.

Unlike the fossil fuels, fissionable materials do not provide a versatile energy source. We have noted that atomic

[9] United Nations Department of Economic and Social Affairs, "World Energy Requirements in 1975 and 2000," *Proceedings of the International Conference on the Peaceful Uses of Atomic Energy*, Vol. 1 (New York: United Nations, 1956), pp. 21, 22.
[10] *Ibid.*, pp. 21, 22.
[11] See Tybout, *op. cit.*, supra, note 2, pp. 750-3.
[12] *Ibid.*, pp. 750-3.
[13] *Ibid.*, pp. 756-7.

power seems destined to serve only large bulk energy consumers, except in military applications, where cost is not a deterrent. Two of the most important uses of energy in the United States today are for transportation and space heating where energy is usually consumed in small dependent units. The Paley Commission reported that transportation accounted for 30 percent of all end uses of energy in the United States in 1947 and expects it to hold approximately the same position through 1975[14] while Putnam attributes 34 percent, or about one third of American energy consumption, to space heating.[15]

Taking account of these and other limitations the writer has estimated that atomic power can satisfy only about a quarter of domestic energy needs without adjustment in consumption patterns.[16] Such adjustment might take the form of more consolidated living in urban centers where central district heating can be economically utilized, more reliance on electrification for transportation and other changes.

Essentially the same conclusions apply in other regions of the world, though these regions may never face a reorganization of transportation in the same degree because they will never adopt the motor vehicle as a principal mode of mass transportation before increased costs of fluid fuels make it uneconomic for them to do so. In this respect the atomic power potential abroad is somewhat less limited than in the United States. On the other hand, the relatively fewer opportunities for bulk consumption of industrial electricity and process heat in many other nations will be a retarding influence upon their adoption of atomic power.

The mature economies of Western Europe and Japan seem most likely to use atomic power profitably within the next decade or two. These regions are already facing delivered fossil fuel costs twice or more those of the United States. Certain developing economies like Brazil, and perhaps underdeveloped countries as well, facing high costs of conventional fuels due to their transportation over long distances may find applications of nuclear power. But such applications will not be extensive for two reasons: (1) as we have noted, there is a dearth of markets for bulk consumption of energy in underdeveloped economies and (2) atomic power requires a large capital investment per unit of power output.[17] The adverse conditions in underdeveloped countries with respect to both points are well known.

To be sure, we want to aid Western Europe, Japan, and underdeveloped countries in their search for energy sources. But it is not immediately obvious that we must build a large number of atomic power generating stations in the United States to do this. Nor is it clear that we have always been guided by a concern for the energy needs of other world areas. For example, instead of concentrating on atomic power, we might better assist the underdeveloped countries by advancing the technology of solar energy collection and storage. These countries lie in the most sunlit regions of the world. Solar heat collectors offer them small independent power units and they can be designed to be labor-intensive rather than

[14] Presidents Materials Policy Commission, *Resources for the Future* (Washington: Government Printing Office, 1955) Vol. 1, p. 125.

[15] P. C. Putnam, *Energy in the Future* (Van Nostrand, 1953), p. 102.

[16] *Op. cit.*, supra, note 2, pp. 764-5.

[17] W. Kenneth Davis, "Capital Investment Required for Nuclear Energy," *Proceedings of the International Conference on the Peaceful Uses of Atomic Energy*, Vol. 1 (New York: United Nations, 1956), pp. 290-302.

capital-intensive.[18] Both advantages are the opposite of those offered by atomic power. One can only speculate as to what might result from a national effort to develop solar energy comparable to the effort we are making to develop atomic power.[19]

Perhaps a better interpretation of our intensive interest in atomic power development views the peaceful atom as a symbol of the United States' intentions, proof—over and over again—of American interest in constructive applications of the potentially destructive atom. In the absence of clear economic motivation such considerations would seem logically important.

Our concern for the peaceful atom is not independent of the fact that we are the only nation to have actually used atomic weapons in warfare. Nor is it independent of the Soviet theme of some years back that American "electric utility monopolists" would never permit atomic power to threaten their investments in supposedly obsolete equipment. But probably more than either of these, atomic power is regarded as a manifestation of American technological leadership. As the sputniks circled the globe last October many an American took refuge in our atomic progress.

Social Costs

If noneconomic considerations are to dominate, let us evaluate their social costs. If the psychology of a peace offensive is involved and if industrial technological novelty is a goal in its own right, these facts had best be noted and compared with social costs. Perhaps in the process we will gain insights into one aspect of the techno-economic rivalry that is coming to play an important part in the cold war.

Civil Byproducts. First, let us recognize as we have never done before, a public interest in civil byproducts of defense technologies. This is a point in favor of atomic power development though not necessarily in favor of the present crash program.

Military objectives have already led to the conduct of much of the necessary basic research for civil atomic power, have stimulated exploration for uranium ores, and have created the refining, fuel enrichment and fuel reprocessing facilities that give the nuclear power industry a supply base upon which to build. The facilities for fuel enrichment and reprocessing even today are publicly owned though there is every reason to think that, as the atomic power industry grows, these activities will be conducted in the private sector also. Until that time, the civil power industry will benefit from whatever economies of scale result from the joint production of fissionable materials for both military and civil power programs.

It is likely that similar situations can be found elsewhere in our defense program—that other civil developments might gain from a base already established at public expense. Resulting benefits are social windfalls not properly charged to civil applications because incurred in the first instance solely for the purpose of advancing a defense goal. It goes without saying that in such circumstances the public interest requires efforts by public authority to ensure workable competition in such by-product applications.

[18] A major problem in the development of improved solar energy storage techniques for the future will arise from the fact that large quantities of water (frequently used in present-day storage systems) are not available in many of these regions.

[19] Public policy has become increasingly alive to the need for small power units in underdeveloped countries and to the foreign exchange problems created by the capital investments (and other aspects) of atomic power. See National Planning Association, "Summary of Findings—Policy Suggestions for the Future," in *Productive Uses of Nuclear Energy* (Washington: 1957), Ch. 6. There is no sign, however, that our emphasis has shifted from atomic to solar energy as a result.

Federal Research. The Atomic Energy Commission is financing and directing research specifically for civil atomic power. This began with five selected reactor concepts in 1954 under the title of "Five-Year Power Reactor Development Program" but has since been expanded to cover eleven reactor concepts and appears to have lost its five-year terminal feature. The writer estimated that financial commitments for this work will total $500 to $600 million through fiscal year 1958.[20]

The fact of federal sponsorship of research is not in itself evidence of non-economic goals. Research, even for commercial purposes, may require amortization over a longer time period than provided by the patent system or by most industrial planners. And it may give social benefits so diffused over a range of industries that no one business organization would find sufficient incentive to support the work. Atomic power fits this description well. At the same time, there are undoubtedly costs of speed in the present program. All eleven of the projects are being pursued simultaneously. If taken up with more respect for time sequence, one would normally expect cost savings.

Demonstration Projects. The next phase in public aid looks toward the construction and operation of full-scale generating stations. AEC has called for power-plant proposals from American electric utilities on three separate occasions, specifying each time different kinds of plants and different types of financial assistance it would provide.[21] At last count (January 1958), there were eleven demonstration projects underway or in negotiation.[22]

Financial assistance includes construction and AEC ownership of the atomic reactor itself (in some cases), design and engineering subsidy, training and experimental aids in operation, and waiver of interest charges on fissionable materials provided on loan from AEC. The value of these aids available in appropriations through fiscal year 1958 is $159 million.[23]

There are three civil atomic power stations in construction that do not depend upon Demonstration project assistance but do benefit, along with all other civil reactor power projects, from general purpose public aids.

General Purpose Aids. Civil atomic power plants benefit from the grant of five-year rapid tax amortization available to them but not to conventional electric power facilities.[24]

Second, AEC has announced prices at which it will buy regenerated fissionable fuels from atomic power plant operators. Such fuels can be produced in the course of consuming other fissionable fuels leading to the novel technological fact that nuclear energy and new nuclear fuels can be created as joint products. The Commission's prices exceed its own estimates of the long-run commercial value of the fuels it will buy by such an amount as to have the effect of subsidizing an additional 10 to 25 percent of the cost of atomic power as long as they are maintained.[25] AEC has announced that it will support present prices at least through June 30, 1963.[26]

Third, by recent legislation Congress authorized AEC to indemnify reactor operators for up to $500 million of third party liability arising from an atomic

[20] *Op. cit.*, supra, note 2, pp. 772-5.

[21] Details are found in Tybout, *op. cit.*, supra, note 2, pp. 775-80.

[22] Atomic Energy Commission, *op. cit.*, supra, note 1, p. 101.

[23] Tybout, *op. cit.*, supra, note 2, Table 15, p. 776.

[24] *Ibid.*, p. 782-3.

[25] Percentages based on calculations by the author. *Ibid.*, pp. 780-2, 794.

[26] Atomic Energy Commission Press release No. 1060, May 118, 957.

disaster.[27] The financial costs of this measure are entirely speculative in the absence of actuarial data on atomic accidents though it is interesting to note that the maximum liability insurance made available by the private insurance industry is $60 million and this only by combining two pools made available by stock and mutual insurance companies, respectively.[28] Moreover, when we contemplate nuclear disaster, we cannot ignore the genetic effects of radiation. Traditional concepts of compensation are hardly relevant for this problem though one cannot overlook it in a social accounting. Essentially, we are faced with a choice between the costs of atomic power today, as affected by protection and safety arrangements, and the biological welfare of succeeding generations.

Another aspect of the radiation problem need involve no atomic accidents. This is the question of radioactive waste disposal and environmental safety. We have not yet found a better method of disposing of radioactive waste products than by underground or deep-sea burial in tanks and vaults. Even this approach has its dangers, particularly over the centuries-long periods that serious radioactivity may persist. By moving ahead with atomic power plants at maximum speed we are adding to the burden of disposal before all efforts can be made to find an optimum solution.[29]

Electric Utility Rate Regulation. A final source of financial assistance is materializing from a rather surprising quarter—state public utility regulation. Conceived as a device for the protection of consumers, public utility regulation appears destined to serve the interests of producers in providing a vehicle for full recovery of atomic power costs not otherwise covered despite the fact that these costs will be significantly higher than the costs of conventional power.

This is being done in two ways.[30] First, in some atomic power plants jointly sponsored by groups of electric utilities the cost of the atomic plant itself is charged to operating expenses of the participating utilities as a research and development cost. Operating expenses of the atomic power plants will then appear (when these plants come into operation) as total costs of power production and are not likely to be judged unreasonable on this basis.

In judging the merits of this practice we note that the construction of full-scale electric-generating facilities is not within the usual meaning given to research and development. It is doubtless true that valuable lessons will be learned in the process of building and operating atomic power stations. But in unregulated businesses a new technology must lead to costs no higher than competing technologies before it can be introduced. Otherwise the sponsoring firm would never attain the volume of sales necessary to permit improvements to be realized from operating experience.

The concept of research and development can hardly be limited if interpreted to cover cost reduction from plant operations in new fields of technology. For example, merely by virtue of the growth of an industry, service and supply facilities become more specialized and lead to economies (external economies) which have nothing directly to do with

[27] Public Law 256, 85th Congress, 1st Session, Approved September 2, 1957.

[28] Tybout, *op. cit.*, supra, note 2, p. 785.

[29] For some indication of problems yet to be solved, see Atomic Energy Commission, *op. cit.*, supra, note 1, p. 135-6 giving recommendations by a special committee of the Earth Sciences Division of the National Academy of Sciences.

[30] The author's original analysis of this topic appears in "The Public Investment in Atomic Power Development," *Law and Contemporary Problems*, Winter, 1956, pp. 80-82 and is brought up to date in *op. cit.*, supra, note 2, pp. 787-92. The latter reference includes an important typographical error in Table 17. The words "not allowable" in column (3) of that table should be changed to read "information not available".

the operation of plants in the industry but nevertheless lead to cost reductions in those plants. The concept eventually devolves into the familiar "infant industry" case.[31]

The second approach is less subtle. Some atomic power installations are being constructed on the obvious assumption that full costs of atomic power will be reimbursed (presumably with a fair return on fair value) through normal rate-making practices. In all such cases known to the author, no certificate of public convenience and necessity or other legal device requires the state regulatory body to inquire into the electric power generating technology which the utility proposes to use. Apparently the assumption is that least-cost technologies will always be installed. This assumption we now find fallacious in the case of atomic power.

If public utility regulation cannot assume that least-cost technologies will be followed, the only obvious remedy is to suggest more extensive regulatory inquiry into production technologies as a preliminary to their adoption. Electric utilities are not organized for nor are they intended to represent the public interest in the same way that regulatory commissions or the AEC are. A decision to install high cost technologies at the consumer's expense accordingly requires review by appropriate public authority.

Evaluation

The overall pattern of public aid reflects the unmistakable priority given civil atomic power. We expect to be able to generate atomic power as cheaply as conventional power by the late 1960's.[32] In the meantime atomic power plants will be subsidized by a variety of devices leading to costs in the hundreds of millions of dollars but probably not as much as a billion dollars. Projections of atomic power costs are too uncertain to permit a more exact estimate in dollar figures.[33] In addition there is the $500 to $600 million of federal research expenditures committed to date plus almost certain increases in these.

The expected economic benefits are conspicuous by their unimportance. Granted the long-term significance of atomic power, it will not solve the fluid fuels problem; and electricity generation from coal seems safe enough for the remainder of the present century, at least in the United States. The most that could be expected on the basis of domestic energy needs would be a long-range systematic civilian power research program.

A better case can be made for atomic power development from the standpoint of foreign policy. We know that expenditures of the above order of magnitude are not at all unusual in foreign aid programs. And many would make the impressionistic judgment that civil atomic power development is well worth the cost in foreign policy results. Before we slip into easy agreement let us review some other aspects of the problem, most

[31] The question of whether the costs at issue should be disallowed goes beyond the principles that are relevant here, and into matters of legal status. The matter should be brought into line with economic principle, but not so rapidly as to create serious inequities.

[32] See Tybout, *op. cit.*, supra, note 1, pp. 758-60.

[33] The difference between the cost of atomic electricity and that of conventional power is estimated on a lfetime basis for both types of plants built in the time period over which atomic power costs exceed those of conventional power. To the extent that this difference is not covered by subsidy, it will be subject to regulatory approval as a charge against rate payers.

Using atomic power cost and installed capacity projections made by AEC officials and other experts in 1954 and 1955, the author estimated that atomic electricity would cost the public $1.4 to $1.8 billion more than would the same amount of conventional electricity from plants built prior to the establishment of low cost atomic power. See "The Public Investment in Atomic Power Development," *loc. cit.*, supra, note 30, pp. 82-4. More recent projections of atomic power capacity by the same sources have been scaled down, while projected costs are now regarded as more indefinite.

of which can never be represented by exact dollar figures.

The assault on the public utility concept is probably best interpreted as a product of the national priority for atomic power. In order to accommodate the high costs of atomic power, the term "research and development" is being interpreted to cover plant costs and the least-cost-technologies tradition is being jeopardized. Never a robust creation the public utility concept might have continued to perform more or less adequately in the absence of so powerful an adversary.

Environmental safety from radioactive contamination still presents unsolved problems for mass storage of waste materials. The possibility of extraordinary third party damages is recognized, to say nothing of genetic effects. Perhaps we shall never be completely secure against biological effects of radiation. But a more deliberate approach to atomic power would increase our chances.

The conclusive fact from the author's standpoint is that the most important of these social costs will arise from the premature installation of a large volume of atomic kilowatt capacity. The federal subsidy, the damage to public regulation, and the dangers of radioactive contamination would be mitigated, if not eliminated, by a postponement of the installation of most full-scale stations until technologies are better established. It is hard to believe that laboratory, pilot plant and prototype models could not provide for a better approximation of conventional power costs before generating installations are constructed. At the same time, it should be possible through research and development to continue to reap the psychological dividends that come with scientific leadership in one of the areas where the United States and the Soviet Union match technological prowess.

The significance of atomic power for underdeveloped areas is questionable for the foreseeable future, as we have noted. One can imagine many forms of economic aid that would have a more direct bearing on the welfare of underdeveloped nations. Over the longer haul the possible role of atomic power will depend on rather considerable improvements in the cost of power from small-scale installations, underscoring the relative importance of research results as compared with operating plant experience.

Perhaps the most that we have to gain from building a large number of atomic power generating stations is the experience it gives American reactor manufacturers so that they can compete in the design and construction of European and Japanese atomic power installations. As previously noted, we expect atomic power to offer economic advantages first in these regions. But even this gain is primarily illusory in the sense that it will be achieved in part from the role American manufacturers are playing in the construction of military reactors. Compare the statistics in the first paragraph of this article. Civilian reactors, of course, give more direct experience in the design of other civilian reactors. But the net advantages of a heavy domestic atomic kilowatt program become more than doubtful when pursued to this point.

On the other side of the ledger, atomic power has provided a valuable service in shaking our preconceptions of government in a cold-war economy. Just as the Einstein mass-energy relationship has shaken secrets out of hidden pockets of the universe, so has its administrative result, the atomic energy program, shaken our neglect of the public interest in defense technologies. Civilian atomic

power is, after all, a by-product of technologies developed for defense. There may well be social advantages in developing commercial by-products of other military technologies and there is the usual public interest in the creation of competitive industries to adopt the results.[84] Whatever we may conclude about the substantive merits of atomic power promotion, the procedural experiences of the Atomic Energy Commission in preparing a civilian industry for commercial atomic energy will be of lasting value.

[84] The author has a forthcoming monograph on the effects of AEC policies to create competition in atomic supply activities, as determined by mail survey. See *The Atomic Products Industry* (The Ohio State University Bureau of Business Research).

The "Price-Less" Land of Israel†

By ALEX RUBNER*

THIS ARTICLE describes the conditions under which the Jews—constituting about 92 percent of Israel's present population— rent their farming land. It will be shown that only a nominal rent is charged by the two public landlords who own nine-tenths of the area now being cultivated by the Jewish farmers. This system has induced a serious misallocation of factors within the agricultural sector and has distorted the price-and-cost structure of Israel's farming output.

Political Background

The roots of modern Jewish colonization in Palestine—on the major area of which was established the state of Israel in 1948—can be traced to the political concepts of the World Zionists Organization and the charitable (and political) aid which Jewish communities of many countries bestowed upon those "who returned to Zion."

One of the pertinent tenets of the Zionists creed was the declared urge to change the occupational structure of the Jewish group. The striving for a sovereign state was tied firmly to the idea that the economic life of the Jews must be "normalized" and that, in particular, a class of Jewish farmers should be called into existence.

The bulk of Zionist philanthropy was directed towards the aim of manufacturing farmers. The sons and daughters of Jewish European middle-class parents who went as pioneers to drain the swamps of Palestine looked upon becoming farmers as a religious vocation. These young pioneers who felt that they were purifying their souls by working on the land were pointed out to visitors to the Holy Land as the outstanding example of the power of the Zionist idea to revolutionize Jewish life. Many of the leaders of the present Israeli society began their life in this part of the world as agriculturalists; until recently the members of the cooperative farming communities were regarded as the moral elite of the country.[1]

Half a century ago the Zionist movement established the Jewish National Fund. Its directors, who declared themselves to be the trustees of the Jewish group dispersed throughout the world, were charged with the task of acquiring land from the natives of Palestine. No accurate data on the volume of donations which reached it are available but it is known to have exceeded considerably the sum of 100 million dollars. The Jewish National Fund leased the acquired land at no rent, or only a nominal rent, to the (predominantly socialist) pioneers whose hearts were set upon becoming farmers. This rent policy served, it was believed, not only the general Zionist purpose but also "protected the new farmers from the exploitation of rapacious landlords." The employment of Arabs on the land of the Jewish National Fund was prohibited and the hiring of Jewish

† The author acknowledges his indebtedness to Marion Clawson, economist with Resources for the Future, Incorporated, of Washington, D. C., and for the years 1953 and 1954 special advisor to the Israeli Government. Mr. Clawson helped compile a handbook on Israeli agricultural economics and the present author has had access to some of his analytical writings (unpublished).

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[1] Cf., A. Ezioni, "Agrarianism in Israel's Party System," *The Canadian Journal of Economic and Political Science*, August 1957: "Recently a great number of special privileges accorded to agriculture have been subjected to public criticism. These privileges are presented as anachronistic relics from a time when agriculture was the privileged occupation of the nation . . . ."

labourers by the settlers was relentlessly discouraged.[2]

The purchase of land and the establishment of Jewish villages also had political and military implications.[3] The Zionist land purchases were arranged in such a manner as to disperse widely the new villages over all the areas of Palestine. After the second world war the Zionist claims for a sovereign state began to be examined on an international level and this land policy of the Jewish National Fund was turned to good account. A disproportionately large area was allotted to the Jews (out of the former area of Palestine) because the existence of Jewish farming settlements backed the Zionist claims to areas said to be populated by Jews and therefore to be incorporated within the proposed Jewish state.

In the pre-1948 period the Jewish villages provided the illegal Zionist army, the Hagannah, with opportunities to train its soldiers and store arms with relative impunity. But even today agricultural settlements are asked to perform acts which are of primary military value and often inimical to the material welfare of its members. The Israeli army also presses the government to settle new farmers near the frontiers in order to provide additional military safeguards against marauders and hostile infiltrators.

[2] There were also thousands of Jewish farmers who regarded themselves as good Zionists but bought or leased land for the purpose of employing Arabs as wage labourers. The Zionist movement viewed such capitalist farming with disdain and the farmers who employed Arabs suffered much social ostracism at the hands of Socialist-Zionists who controlled the "official" colonization projects.

[3] A. S. Hoofien, *Annual Address*, Bank Leumi, Tel Aviv, Israel, 1953: "The basic aim of our agricultural policy during the Mandate was not the production of foodstuffs but colonization. Except for some periods during the second world war, the Arab fellaheen supplied food in plenty and cheaply. In order that the Jewish farmers might be able to sell their products, it was necessary to initiate a campaign of persuasion—and sometimes even force was used—to make the urban population buy the dearer Jewish agricultural produce. This fact alone shows that other factors, apart from the supply of food to the urban population, were the decisive elements determining the progress of Jewish agriculture . . . ."

Although Israel has incorporated within its boundaries the larger part of the former state of Palestine, its leaders are aware of the declared designs of its neighbouring Arab states on its territory and especially on the sparsely populated lands to the south, the Negev. The Israeli authorities have stated explicitly that, in order to forestall future pretensions to its southern territory, its colonization program is planned primarily with this consideration in mind and does not aim at locating new settlements at the point of economic optimum.

Farming Land Today

The pattern of the land ownership of the total area of Israel is as follows:[4]

Government and government agencies	76.5
Jewish National Fund	18.0
Private Jewish landlords	3.0
Private Arab landlords	2.5
	100.0%

Approximately 4½ million dunams[5] of arable land are being farmed in 1958; of this, half a million dunams are farmed by Arabs. Of the 4 million dunams of arable land which are cultivated by Jewish farmers only about 400,000 dunams are in the hands of private landlords.

Apart from exploiting more intensively the existing irrigated lands, Israel's farming can in the future grow only if (1) some of the submarginal land is ameliorated; (2) some of the non-arable land is used for pasture; (3) irrigation projects (likely to add another one million dunams to the present one million dunams of irrigated lands) are executed. The land reserves for all these development schemes are almost entirely in the

[4] These are the author's estimates based in part on data in, H. Halperin, *Changing Patterns in Israel Agriculture* (London, England: Routledge Company, 1957), p. 37.

[5] One acre is approximately four dunams.

hands of the State of Israel and the Jewish National Fund. These two public landlords intend to create in 1959 a National Land Company to which their present holdings will be transferred. The new company would then administer under joint control 95 percent of the total land area and would become the landlords of 80 percent of the total farm land and 91 percent of that cultivated by the Jews.

What is the position of a person in Israel today who has the means to buy his own land and wishes to start up in farming? In practice he can neither buy nor obtain a long lease on land held by the two public landlords for these—with a handful of exceptions—do not allot land to (so-called) capitalist farmers unless they are members of a cooperative group and undertake to employ no hired hands, buy their supplies from cooperatives, market their goods exclusively through cooperative marketing bodies, etc. Thus a prospective farmer who does not wish to operate his farm under such restrictions has recourse only to the very limited land resources of private landowners. As the supply of privately-owned land which comes on to the market is very limited, it fetches a very high price and the rents asked for private leases are out of all proportion to those charged the cooperative farming groups by the public landlords.

Eight of Israel's numerous political parties each maintain a colonization department which establishes farming cooperatives (for new settlers) on an ideological basis. The cooperatives are constituted so as to yield the maximum political and/or religious homogeneity though actual membership of the organizing political party is sometimes dispensed with. The political parties are rewarded for their labours at elections when "their" villages may show a 100 percent poll in their favour. Farmers who exhibit signs of disloyalty after they have been settled on their homestead have been known to be expelled from the cooperative for expressing strong dissenting views or when suspected of not voting for the organizing political party.

The two chief forms of agricultural cooperatives are the Kibbutz and the Moshav.[6] The political patrons of these cooperatives arrange for their villages to receive the most lucrative capital subsidies that political bargaining can yield and the secretary/treasurer of the cooperative negotiates for a long, collective lease of land with one of two public landowners.

Size of Rent

In Israel the amount of agricultural rent is not based on such factors as the length of the lease, the quality or location of the land, the services rendered by the landowner, etc., but depends largely upon the arbitrary decisions of the public landowners. The author collected, in the summer of 1956, comparative data on the rents paid by different farmers in a specific area in the central part of Israel. All the rents quoted below refer to more or less similar arable land with access to irrigation facilities: (a) In the Arab village (within the area investigated) the general practice was for the landlord to charge rent in kind—the proportion being one third of the crop. (b) A Jewish capitalist farmer paid a

[6] The *kibbutz* (plural, *kibbutzim*) has been likened to a "secular monastery." (See A. Hovne, *The Labour Force in Israel*, Jerusalem, Israel: Falk Project for Economic Research, 1956). Its members receive no money wage, eat in communal dining halls, elect their managers at general assemblies by open voting. All property is owned jointly and every member is available daily for work assignment by the elected director.

The *moshav* (plural, *moshavim*) is a cooperative smallholders' settlement. Its members elect the management and this in turn is authorized to impose important limitations upon the economic behaviour of the individual settler particularly his right to employ outside labour. There are joint purchasing, marketing, "cultural" bodies, membership in which is compulsory.

Jewish landowner IL 24.500 per dunam for a one-year lease.[7] (c) A small strip leased from a government agency for a short period to a Jewish capitalist farmer at an annual rent of IL 5 per dunam. (d) Two kibbutzim were charged an annual rent of IL 0.400 per dunam for a long lease from the Jewish National Fund.

When measured as a percentage of the gross expenditure of all Israeli farmers, agricultural rent has been a rather constant item—0.6%.[8] The theorists of the Jewish National Fund have said that they regard "2% of the crop value, ex farm" as a "just rent" but neither of the two public landlords adhere to this rule when letting the land under their control. In 1955 the total rent income of the Jewish National Fund (including rent for non-arable land) was IL 1¼ million. The Government collected in that year rent from its farming land amounting to only IL ½ million.[9] The above percentage of rent as an expenditure item by all Israeli farmers includes, of course, the high rent paid by the private Jewish farmers and the rent payments in kind of some Arab farmers. Consequently, it is not unreasonable to impute a rent payment of 0.4%—out of the total value of their agricultural output—to the collective settlements.

We have already referred to the fact that the public landowners do not usually lease any of their land for long periods to capitalistic farmers. It has proved impossible to ascertain which rules are applied to short leases of irrigated land. Such leases seem to fluctuate between IL 5 and IL 8 per dunam but there have been cases where, for reasons of special privilege, as little as IL 1 was charged.

Through the courtesy of the head office of the Jewish National Fund, the author was permitted to examine a contract which its directors had signed in 1951 with a negotiating body representing several hundred settlements. The Jewish National Fund does not charge the kibbutzim and moshavim a rent per dunam leased but fixes a unitary rent per land unit and each village is allocated a number of land units which equal the number of family units. The concept of a land unit is that each family should be allocated only as many dunams of land as it is capable of working without outside aid. The size of the land unit is determined by the anticipated main farming activity of the new village and, in part, by the availability of irrigation facilities. They are designated as "dairy units," "citrus units," "intensive cultivation units," "unirrigated land units," etc. and consist of 17 to 50 dunams. The contract referred to above provided for a 49-year lease but reserved the right of the landlord to revise the rents after seven years. The rent charged per land unit in the 1951 contract was IL 12; i.e., between IL ¼ to 1½ per dunam.[10] I have found, however, that this collective agreement in reality provides terms for the maximum rents and that most settlements manage, by individual bargaining, to pay lower rents. As both of the public landlords would regard it as antisocial to bring action in court against farming settlements for non-payment of rents it is not unusual for young cooperatives to run up rent arrears for several years.

[7] The Israeli pound is usually written, "IL," and its official exchange is $0.56 but unofficially it is between $0.33 and $0.40.

[8] M. Noam, *National Income Originating in Israel's Agriculture* (Jerusalem, Israel: Central Bureau of Statistics, April 1956).

[9] Ministry of Finance, *Explanatory Notes on the Budget Proposals for 1956*, Jerusalem, Israel, Feburary 1956.

[10] The contract provided for villages on whose lands industrial plants had been erected to pay increased rents.

A Digression on Israel's Water Resources

The sources of water in Israel are concentrated in the north of the country. They are the rivers which can be utilized for irrigation, the accumulating groundwater and the rainfall. All decrease in quantity as one passes from the north to the south. It is possible to dryfarm one crop per year in the north but the crop value per dunam can be augmented manifold by additional irrigation. The south has an arid climate which allows for practically no farming without irrigation.

Organized irrigation schemes are therefore an integral part of agricultural development. Until the state was established such schemes as existed provided for transporting the water over only short distances and most Jewish intensive farming (particularly citrus) utilized the groundwaters by the boring of artesian wells. The cost of water was then relatively cheap.

The State has since financed national projects which transfer, to the south, a substantial proportion of the waters of the north and center—mainly by means of steel or concrete pre-stressed pipes the largest of which have so far been 66 inches, but bigger ones are planned. In 1960 the third and last phase of operations is scheduled to begin and aims at transporting the headwaters of the Jordan to the south—a distance of up to 160 miles. Whilst many irrigation projects in the world *produce* power as a by-product, in Israel the transfer of water by expensive pumping methods under pressure *consumes* power, obtained mostly from independent diesel prime movers.

Irrigation costs are expensive in Israel not only because water is transported over long distances, but also because some of it is pumped up to hill settlements (e.g., the village of Manarah) as high as half a mile. From the standpoint of economic logic, Israel's water resources—which are not sufficient to irrigate all the available arable land—should be used in low-lying areas and on farms in the north and the center of the country near the sources of irrigation supplies. I have indicated in the introduction what political and military considerations have prevailed upon the planners to irrigate the far south and to pump water uphill to farming cooperatives in mountainous districts.

It will become apparent later why it is relevant to quote data for the average water price. In 1958 the average price of Mekoroth[11] water per cubic meters was IL 0.043.[12] Marion Clawson has estimated (in unpublished memoranda) that in 1960 the average price of Israeli irrigation would be IL 0.053; such an average price would mean that most farm produce (except vegetables and citrus) would be bearing a water cost equivalent to 20-40% of their ex farm value.

An economist of the Ministry of Agriculture has estimated the costs of supplying one cubic meter of water to farms in the north, as compared to farms in the south, as 1 : 7.[13] In 1958 the extreme price range of Mekoroth irrigation water extended from IL 0.007 in the north to IL 0.181 for a hill settlement also in the north and IL 0.178 for a cooperative village in the extreme south.

The Ideal of Mixed Farming

With some exceptions—the most prominent being liquid milk—Israeli farmers are not paid by their cooperative marketing organizations, ex farm but after delivery to the urban marketing centers. As most of the produce is destined for the urban conglomeration of the Tel Aviv area, farmers are bearing

[11] Mekoroth is a semi-public water company which controls an overwhelming portion of the irrigation waters. It is financed by the State of Israel and the Zionist movement.

[12] I. Duvdevani, "The High Cost of Water," *Davar Journal*, April 17, 1957.

[13] E. L. Levie, "Water Costs as a Factor Limiting Production," *Haaretz Journal*, June 8, 1955.

greatly varying transport costs. It is self-evident that in a free market economy, which includes also the free sale of land, farming land near the urban centers fetches relatively higher prices and such land would be used primarily for the growing of high-value products and /or perishable goods, e.g., milk, eggs, vegetables. Indeed, insofar as capitalist farmers have been able to acquire land near the cities, they have tended to use it exclusively for this purpose.

The socialist planners of Israel's agriculture, however, aim at "autarchy" within each farm unit. They are, on the whole, opposed to a division of labour within the farming sector which could be construed to mean that farmers would concentrate exclusively upon one branch of activity. It is argued that Jews can be turned into a class of farmers only when they become emotionally attached to their homestead and this purpose, it is said, is served best by practicing mixed farming—this including the keeping of livestock and the production of milk for the urban markets. The American grain farmer, who—like a town dweller—buys his bottled milk from a shop, is viewed with abhorrence.

The director of the State Agricultural Bank expressed this official attitude when he scorned the economists who proposed that Israel's farmers should specialize in accordance with the location of their lands:

". . . . thus they want to bring about in agriculture a division between the producers of raw materials and those who are to process them; logic and commercial experience will show that the raw materials must necessarily be cheap and the processed goods dear. The result would be that there would come into being a further stratus—between the town and the village—and we would have suburban rings of dairy and poultry farms that receive their raw materials from distant areas . . . just as the urban industry receives its raw materials from the colonies and agrarian countries."[14]

During the severe foreign currency crisis of 1949-53 the economic minister, Dr. Bernhard Josef, planned to make Israel's poultry and dairy farmers self-sufficient in grains. Under normal marketing conditions farmers near the towns would have bought the grains grown by farmers on the low-priced land away from the towns. Dr. Josef's ministry opined that such a division of labour was reprehensible as it turned farmers into traders and the poultry and dairy farmers were encouraged to grow—even on their expensive land near the towns—a part of their needed grains.[15]

Foreign economic advisors and some Israeli "rebels" (e.g., R. Weitz) have been eloquent about the obvious disadvantages which flow from the unmodified ideal of mixed farming but they have failed to make much headway. Consequently, some of Israel's hill settlements and even villages in the far south transport over long distances to Tel Aviv high-value produce, which has been grown at a high irrigation cost.

"*The Water Price of Land*"

We have shown that for all practical purposes a family wishing to take up farming must join one of the cooperative settlement groups which are organized by the eight political parties. Having joined, the settlement group is given little say by the Zionist and Government colonization departments as to the area in which it will be allocated public land.

[14] H. Halperin, "Considerations Affecting Our Settlement Policy," *Economic Quarterly* (Tel Aviv, Israel), September 1953.

[15] In some cases, settlements in the north were "permitted" to use grains grown in the south. Lest, however, the principles of self-sufficiency of each land unit be breached, the lands in the south were leased to the northern settlements. The cooperative villages had to trek with their machinery and men, sometimes as far as 120 miles, to the south for the sowing and harvesting of the grain. For ideological reasons the leased areas of the south were regarded as part of the northern settlements and the danger of trading in grains was averted.

True, insofar as the nominal rent payment is concerned, it matters little to the farmers whether they are allotted land 100 miles to the north or south or 10 miles east of Tel Aviv. The accidental location of their new homesteads will be, however, a determinant fact when the transport costs are calculated and particularly when the price of the irrigation facilities is taken into consideration. In fact, the latter consideration is so momentous that under conditions of a free-market economy the price of farming land in Israel would probably be most decisively determined by the proximity of the land to the sources of cheap irrigation water.

The Israeli farming sector finds itself in an anomalous position because on the one hand 91 percent of the farming land pays an ipso facto equal rent and on the other hand irrigation costs vary widely and are a very important cost-element to the agricultural producer. Therefore, schemes are afoot to introduce *real rent differentials by means of the water price*, three of which are summarized below:

(1) The Zionist colonization department and the Ministry of Agriculture pay farmers in areas which have a high water price a subsidy, *not per dunam farmed*, but per cubic foot of water bought. Many view this scheme with favour and are demanding that it be extended even further in the future.[16]

(2) On a modest scale, Mekoroth is "averaging" the water prices which it charges though for institutional reasons it is unable to do this as fully as most of its directors would like. The tendency towards equalizing the water prices is pronounced though it is unlikely that Mekoroth will finally arrive at *one* mean price for its water as some extremists demand. This semi-public water company has, however, volunteered its services to the Ministry of Agriculture saying that it is prepared to act on its behalf as a "rent collector," i.e., to tax the surplus profits of those who find themselves fortuitously settled in the north by charging them a higher water price. Those directors of Mekoroth who are protagonists of the "water taxation of land" have received influential support, though the support is by no means unreserved amongst the socialist planners of Israel. An important official of the Ministry of Agriculture wrote the following in support of the Mekoroth aspirations to tax the surplus profits of the more profitably located farmers.:

> "It is neither fair nor just that the settler who has by chance been brought to the Hule Basin (in the north) in order to engage there in farming, should reap completely and exclusively the benefit from the cheap water costs of the area simply because he is accidentally near the source of water supply for irrigation; if the Government pursued such a policy, it would force the farmer in the south—who happens to live in an arid area——to bear alone the heavy investment expenditure upon the irrigation schemes and the costs of the pumping—both of which account for the higher price of the water (in the south) . . . . the Government must fix mean water prices."[17]

(3) A new proposal is now being canvassed by prominent farming leaders to inject—via the water prices—disguised rent differentials into the farming economy. It is suggested[18] that the Ministry of Agriculture should formulate some statistical abstraction of a water burden that could be (or should be) born equally by all farmers and would become a *constant* (percentage) expenditure item in all farm products. This

[16] The Israeli Government is subsidizing, though in a disguised manner, the operations of Mekoroth. These subsidies have the effect of lowering the average supply curve of the irrigation waters which does not concern us in this discussion.

[17] A. Amir, "The Water Price in Agriculture," *Economic Quarterly* (Israel: Tel Aviv), October 1954.

[18] Cf., for example, Z. Karib, "The Price of Water," *Ibid.*, August 1958.

percentage would become the measuring rod of Mekoroth and—depending on climatic and soil conditions and the type of produce grown—the water company would charge farmers at such selective prices as to ensure that the water cost in the production schedule did not rise above or fall below this percentage. If this ideal situation were reached, the price of water could then be completely separated from its production cost and the accidental benefits accruing today to settlers near the sources of cheap irrigation supplies would disappear.

A Distorted Price-and-Cost Structure

The policy of charging equal rents—and very low ones at that—for land with greatly varying economic attributes has led to a serious misallocation of resources within the farming sector.[19] The intensified "stickiness" of land as a factor of production has made the farmer in Israel even more immobile. The land policy of the two public landowners has deprived the successful farmer—this applies particularly to the Moshav—of the opportunity to increase his farm holdings.

The induced misallocation of resources has been recognized by the authorities, as a direct consequence of the rent policy, and several attempts have been made to eradicate the evils by physical controls and government decrees.[20] These measures have failed to achieve their aim, hence the different proposals to plan economically the farming sector by charging water prices unrelated to the costs of irrigation supplies.

One might well ask, however, whether the new price policies for water are not likely to create even more serious anomalies. Some of Israel's farm products can be grown commercially only if they have the benefit of relatively cheap irrigation facilities and this is especially true in the case of citrus fruit which must compete on the world markets. Clawson has demonstrated that some Israeli products sell today for less money than would be expended by the farmers to pay for the water element in their production costs if the policy of averaging water prices had been fully realized.

Once it was thought that Israel had more water resources than could be utilized for the irrigation of the available arable land. Today we know that Israel's water potential is not sufficient to provide irrigation for all the arable land area and some agricultural land cannot, therefore, be cultivated economically. What areas then should be left uncultivated? In an economy in which land has a market price the answer is relatively easy to discover. Until now, Israel's only criterion for an economic solution to this problem has been the varying cost of supplying water to different districts. Once the weapon of this criterion is blunted by an equalized—or arbitrarily chosen—water price per cubic meter consumed, areas which have high irrigation costs may well be receiving water at the expense of farm lands which have low irrigation costs but will nevertheless remain uncultivated.

The task set in this article was to describe rather than to prescribe. Yet the conclusion which presents itself, namely the need to introduce wide rent differentials, is too obvious to need much elaboration. The fact that the two public landowners control the overwhelming part of the land should make it easier for Israel's socialist planners to agree to the charging of economic rents.

[19] This is not the only cause. For other contributory causes see, A. Rubner, "Problems of Israel's Economy," *Commentary*, September 1958, p. 210.

[20] The Ministry of Agriculture had to issue several crop-growing directives, e.g., prohibiting the planting of fruit trees except on hills; discouraging the Jewish National Fund from planting trees for aesthetic reasons on non-arable land with an alternative use as pasture, etc.

An Index of Resources Development with Special Reference to Brazil

By JOHN R. P. FRIEDMANN*

Introduction

THE problem proposed here for solution is the calculation of a representative index which will measure the degree of resources development attained in a given area. Brazil was chosen to test the validity and meaningfulness of such a concept; and calculations were carried out separately for each of the twenty-four units of the Federation and for the country as a whole.[1]

By use of this index it is intended to shed some light on phenomena usually associated with economic growth. Income is a widely accepted measure of such growth; the present index is proposed to complement income and to serve as an additional tool of regional analysis. Whereas income measures the results of economic activity, a resources index will tell us something about the "tools" by which income is produced. For the productive capacity of an area is partly a function of the level of development of its several resources. And of particular relevance in this regard are the so-called "secondary" or man-made resources, such as manufacturing industry, agricultural land, transportation, cities, and technical skills. It is the combination of these and similar resources into different organizational patterns that will determine how much a given economy is able to produce. Resources development is therefore simply another component of economic growth; and an analysis of growth which concentrates entirely on the output of an economic system would seem to be partial and one-sided.

It should be emphasized, however, that the present effort is no more than a tentative essay. Additional work will be needed to perfect an index such as the one that is here proposed. By making these preliminary results available it is hoped to stimulate discussion and criticism, as well as to raise some fundamental conceptual issues in the study of economic growth.

Construction of the Index

Five variables were selected to compose the over-all index of resources development representing, in order, measures of urbanization, transport density, land productivity, industrialization, and education (human resources). To a certain extent these variables were felt to be independent of each other and a relatively high value for urbanization, for example, need not require a correspondingly high value for transportation or land resources. But the development of any particular resource is also to some degree dependent on the simultaneous development of all other resources. Cities do not exist without transportation and industrial growth tends to be associated with urbanization. Thus, one would expect to find a tendency for some correlation of indexes particularly at the extreme values of high and low. Real

† The author expresses his gratitude to Dr. Carlos Salles of the Bahia Institute of Economics and Finance for assistance in the elaboration of the statistical series used in this paper, as well as to Drs. Armando Mendes, Anibal Villela, Harvey S. Perloff, Vernon Ruttan, and Mr. Alan Strout for their careful and critical reading of earlier drafts and for many helpful suggestions.

[1] Literature especially devoted to the problem of measuring economic growth is scarce. Among the more significant studies the following two deserve special attention: Harvey S. Perloff, "Problems of Assessing Regional Economic Progress," *Regional Income*, Studies in Income and Wealth, vol. 21 (Princeton: Princeton University Press, 1957); and United Nations, *Report on International Definition and Measurement of Standards and Levels of Living* (New York: United Nations, 1954).

surprises would tend to show up only in areas with indexes lying in the middle range.

In the paragraphs below the construction of each resource index will be separately discussed and subjected to evaluation.

Urban Resources. Cities are widely considered to be important as centers and promoters of economic growth in regions whose rate of material growth will depend to no small extent on the adequacy of their urban resources and the aggressive and organizing spirit of their urban populations. A well-developed urban structure represents an enormous asset for the exploration of other regional resources.[2] Cities are thus seen not only as a consequence but as a positive force in economic growth, be it as market centers, as centers for the transformation of raw materials into finished products, as collecting and distributing centers, as centers of regional and national administrative and economic organization, as centers for the diffusion of urban values, and so forth.

The index of urban resources was constructed according to the formula below:

$$\frac{[\Sigma (C_i W_i)][\Sigma (\bar{P}_i U_i)]}{P}$$

where P is equal to total regional population

C_i is equal to the number of cities in each urban group within the region

W_i is equal to a calculated weight for each urban size group based on the average size of cities in Brazil (see below)

P_i is equal to the average size of cities within each urban size group for each region

U_i is equal to the proportion of the number of cities within each urban size group to the total number of cities in each region

The values for W_i were derived as follows:

Urban Size Group (*in thousands*)	Average Size City (*Brazil as a whole*)	Weight (W_i)
5–10	6,908	1.00
10–25	15,462	2.24
25–50	34,597	5.01
50–100	73,337	10.63
100–250	187,544	27.15
250–500	367,685	52.23
500–1000	512,370	74.17
1000 and more	2,160,044	312.69

Although complex, this index appears to be the most faithful measure reflecting the adequacy of urban resources in relation to the existing population of a region. The usual method of measuring urbanization by using the ratio of urban to total population is inadequate for present purposes because it fails to inform us of the number and sizes of cities in the region.

In the expression above, $\Sigma (C_i W_i)$ represents the total number of "urban units" within a region (number of cities standardized for population size). Therefore, the larger the expression $\frac{\Sigma (C_i W_i)}{P}$ the better will the region be served by urban resources. That some "urban units" also serve populations outside of the region could not, however, be taken into account in constructing the index. This resulted in unusually high values for the index for those regions which, like the State of Rio de Janeiro, contain urban centers of national importance.

However, the "quality" of urban resources had also to be taken into account. In general, the larger a particular city, the better will it also function as a regional center. The expression $\Sigma (\bar{P}_i U_i)$ therefore, gives a weighted average size

[2] The concept of "urban structure" refers to a functional hierarchy of cities that appears strongly correlated with population size. Cf., the author's "Locational Aspects of Economic Development," *Land Economics*, August 1956, pp. 213-227.

of cities in each region. Regions with larger cities will be favored.

Transportation Resources. The facility of transport within a region is a measure of the region's accessibility or, more precisely, of the degree of possible interaction among its urban centers and between any one center and its rural hinterland. Without adequate transportation facilities, economic growth beyond rudimentary levels is impossible.

The present index was derived by dividing the total length of the existing network of roads, railroads, and inland navigation routes in 1955 into the total area of each region (state or territory), on the assumption that transport density would be a useful and accurate measure of the degree to which a particular region has been "opened up" to commerce and communication. A more precise expression of the adequacy of regional transportation services would, of course, be desirable but could not be calculated from available data. Thus, the index remains relatively primitive. It fails, for example, to consider the quality of the network—its year-round utility, its state of maintenance, available rolling stock, etc. In addition, no allowance was made for potentially navigable rivers ("natural highways") which are not now being exploited by commercial navigation although they may be important routes of local transportation, particularly in the North of Brazil. Similarly, coastal shipping and air routes were excluded because of the practical difficulties encountered in deriving a meaningful statistical measure of their significance in relation to total area.

Land Resources. Land constitutes one of the most important resource assets of a region, especially in areas that are predominantly dependent upon agriculture. Thus, land in combination with other resources provides the essential foodstuffs of a nation and the raw materials for its industries. Land, through the export of agricultural products, can also become a significant source of foreign exchange.

The present index was obtained by dividing the average agricultural product for the period 1951-1955 (including income from crop and cattle raising and from extractive industries, other than mining) by the total land area of each region. The resulting quotient is thus roughly equivalent to an index derived by weighting the total agricultural product per unit of cultivated land with an index expressing the relation of cultivated to total area. It thus combines two major variables: productivity of the land (under existing practices and current price structure) and the degree of land development as a simple function of acreage under cultivation. It is evident that, for purposes of time period analysis or for international comparisons, the prices for agricultural commodities must be standardized.

Industrial Resources. For calculation of this index the value of total industrial production in 1953 (latest year for which data were available) was divided by total population in each region to obtain a measure of the intensity of industrialization achieved. The results are expressed in millions of cruzeiros per 10,000 inhabitants.[3]

Human Resources. The quality of the human resources of an area is difficult to evaluate. In the present case only the criterion of education was considered, the index representing the percentage of all persons who, being ten years or older in 1950, had completed at least four years of elementary schooling. No distinction

[3] When all the calculations and maps for this article had been completed another measure was suggested to the author that would express the development of industrial resources entirely in physical terms and would therefore be preferable to the one actually used. The proposed measure would weight the proportion of labor in manufacturing jobs by the amount of energy used per worker in industry.

was made between elementary, intermediate, or superior levels of education; however, the index is felt to be more representative of the intellectual capacities of a population in a relatively underdeveloped area than of its literacy. The index may be considered as indicative of the ability of the inhabitants of a region to use advanced techniques in the development of local resources.

Average Index of Resource Development. The absolute values which were obtained for each of the states and territories of Brazil from the calculations indicated in the preceding paragraphs were converted to relative index numbers, taking the median of each series as equal to 100. The geometric mean of the five indexes for each region was judged to be more representative than a simple arithmetic average because of the small number and wide variations in the values of individual index numbers.

Weighted Resources Development Index. For certain types of analysis, to be explained more fully in a later place, it may be desirable to include per capita income as an additional variable, inasmuch as per capita income suggests not only individual purchasing power and capacity to to save but is commonly associated with a number of other conditions bearing on economic growth as well. The geometric mean of the five indexes was consequently combined with an index based on the per capita income of each unit of the Federation in 1955 (median = 100).

The two (average) resources development indexes, their components, and other data for comparative and evaluative purposes are presented in the table on the following page, and are summarized in graphic form in the appended maps.

General Characteristics of the Average Index

What does the composite index of resources development accomplish? In the first place, as has already been suggested, it offers us another perspective on the problem of economic growth. Areas with a high index presumably have also a high capacity for economic performance. The index is therefore a measure additional to income in assessing the degree of development achieved in a particular area in comparison with other areas or in inter-temporal comparisons. But the index serves economic and regional analysis also in other ways. Two of these may be singled out for special mention.

The first question to which the present index may hold out a tentative answer is the question of the potential capacity of an area for economic growth.[4] The term "potential capacity" is a rather ambiguous one, however, and it may be better to rephrase the question and ask what the index suggests concerning the possible future rate of resources development in a region. Answer to this question will be restricted to a consideration of two points.

To begin with, the several index numbers individually, as well as the average index, will have a tendency to remain relatively stable over the short-run, up to a period of perhaps 10 years. This is because all of the indexes are calculated ratios relative to area or population, so that considerably large absolute changes in either denominator or numerator must occur before the value of the index is substantially affected. For the same reason, the rank ordering of states and territories should remain fairly stable over a period of years. This comment is especially valid for the average index. The conclusion to be drawn from this is that the relative level of resource

[4] The problem of "development potential" of an area has also been discussed, in physical terms, by Abbot P. Usher in his *A Dynamic Analysis of the Location of Economic Activity* (typescript, Littauer Library, Harvard University, n.d.), chapter 8.

development over the short-run will tend to remain the same and significant changes will tend to show up only at intermittent intervals of, say, every decade. By implication, it may be further suggested that the resource economy of an area has a definite structure, changes in which can take place only gradually and by degrees.

On the other hand, the average—but even more the weighted average index—may also be taken as reflecting a particular locational environment for potential capital investments, particularly in manufacturing industry. Although there is no basis for claiming, *a priori*, that differential levels of economic growth once having been established the more "advanced" regions will also continue to grow more rapidly, the fact is not to be ignored that these same regions offer substantial locational advantages to potential investors in the form of external economies, expanded markets, greater accessibility, and so forth. Consequently, "advanced" areas may continue to absorb a major share of new capital investments in the economy as a whole, and more "backward" regions may have to make exceptional efforts to overcome this built-in advantage in order to catch up and reduce the gap in economic growth which separates them from their more favored neighbors. That this may not be an easy task is partly demonstrated by data for total income growth in Brazil between 1948 and 1955 (Table I, column c). Poor states, on the whole, were making slower progress than rich states, and the absolute as well as the relative gap between them was widening. There is some evidence that the same phenomenon is also taking place with reference to the international economy.[5]

[5] Simon Kuznets, "Quantitative Aspects of the Economic Growth of Nations. I. Levels and Variability of Rates of Growth," *Economic Development and Cultural Changes*, October 1956, pp. 19 ff.

The second aspect worthy of attention is the relation of the average index of resources development to income or, to put it in different language, between the "productive capacity" of an area and its output. As will be shown later on, two areas which have the same development index may have quite different levels of per capita income, and the reverse situation may also exist (compare maps I and II). This suggests the possibility of using the resources index, in relation to income, as a means to gauge the productive efficiency of a given resources structure. It may be inadvisable to push this point too far and more experience with the use of the index will be necessary firmly to establish this point and to determine to what extent a valid claim in this direction can be made. However, if true, a new dimension of analysis of economic growth will have been introduced.

Shortcomings of the Index

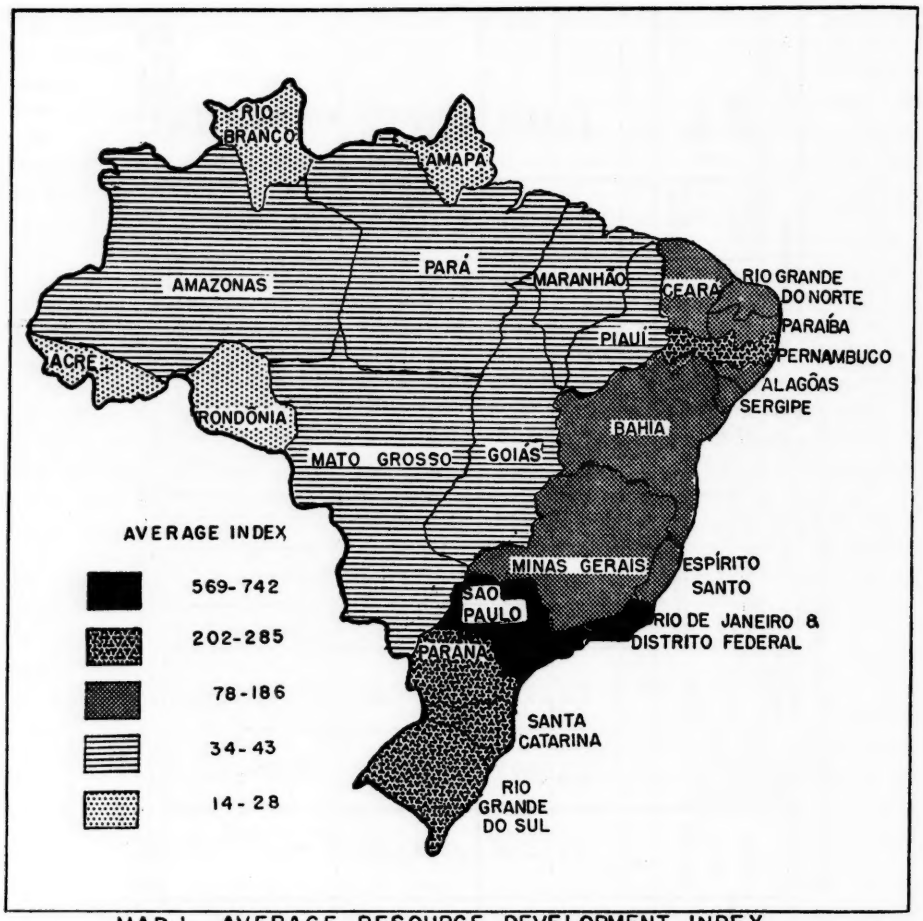
In the absence of knowledge concerning the relative bearing of each factor on the rhythm of economic growth of an area, no explicit weighting of the several indexes was attempted, and each enters into the average index carrying only its own value (weight equals 1). Thus, adequacy of urban resources counts for as much as education or land resource development. This may give a somewhat distorted view of the actual differences in resource development achieved by different areas. However, the influence exercized by any single index over all other index numbers is the same.

The average index is also based on state and territorial averages and fails to distinguish between the more or less developed sub-regions of these areas. All intra-state or intra-territorial differences with respect to resource development are eliminated. In this respect, however, the

TABLE I - BRAZIL: RESOURCE DEVELOPMENT AND RELATED INDICES BY STATES AND TERRITORIES: 1950 - 1955

Rank	State or Territory	Per Capita Income 1955 Cruzeiros	Per Capita Income 1955 Index (Median = 100)	Total Income % Increase 1948/55	Population Density 1955 (Pop./Km²)	Electric Energy Installed Capacity per capita (Kw/10,000 pop.)	Agricultural Productivity 1951/55 Cr$/ha	Labor Force 1950: Agriculture	Labor Force 1950: Extractive Industry	Labor Force 1950: Mfg. Industry	Resource Development: Urban 1950	Resource Development: Transport 1955	Resource Development: Land 1951/55	Resource Development: Industrial 1953	Resource Development: Human 1950	Indices: Geometric Mean $\sqrt[5]{jklmn}$	Indices: Weighted Average $\left(\frac{bo}{100}\right)$
								Percentage distribution			Median = 100						
		a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p
1	Federal District																
	Rio de Janeiro	19,500	410	225	124	1559	2,846	19	2	24	1851	520	492	1040	459	742	3042
2	São Paulo	18,200	382	256	42	1217	2,841	42	1	23	536	430	658	1320	376	569	2174
3	R. G. do Sul	12,400	260	277	17	239	861	59	1	12	226	260	221	587	247	285	741
4	Santa Catarina	8,700	182	235	19	327	1,531	63	4	13	56	340	229	360	318	219	398
5	Paraná	11,700	245	386	14	247	2,794	68	2	11	113	190	250	333	188	202	495
6	Pernambuco	4,900	103	181	39	397	2,122	66	1	11	250	180	183	253	106	186	192
7	Espírito Santo	7,600	161	292	23	154	2,584	73	1	6	60	350	263	93	141	149	240
8	Sergipe	4,300	90	184	32	269	1,597	67	2	11	119	170	171	173	71	134	121
9	Minas Gerais	7,700	163	226	14	406	752	67	2	9	96	110	150	227	176	132	215
10	Paraíba	3,900	81	196	34	113	1,270	78	1	6	102	200	196	120	59	123	100
11	Alagoas	3,500	73	161	42	214	2,175	74	2	9	87	140	217	147	71	123	90
12	R. G. do Norte	4,000	85	183	21	48	791	73	3	5	86	160	121	80	59	94	80
13	Ceará	3,400	71	178	21	86	785	74	1	6	108	90	79	67	59	79	56
14	Bahia	4,600	97	218	10	204	1,166	71	3	8	118	60	54	80	94	78	76
15	Goiás	6,200	130	424	2	37	243	82	2	4	31	40	25	66	71	43	56
16	Mato Grosso	10,300	217	275	0	14	185	63	8	6	88	10	8	107	188	43	93
17	Pará	4,900	103	189	1	79	447	47	20	7	281	10	4	93	129	42	43
18	Piauí	2,300	48	170	5	73	261	82	2	4	98	40	13	27	59	38	18
19	Amazonas	6,600	138	180	0	112	2,927	37	37	6	197	10	4	107	94	38	52
20	Maranhão	3,000	63	239	5	15	332	74	9	4	47	20	21	40	59	34	21
21	Rondônia (T)	n.a.	n.a.	n.a.	0	143	n.a.	18	46	5	145	10	4*	27	106	88	n.a.
22	Amapá	n.a.	n.a.	n.a.	0	41	n.a.	32	26	11	61	10	4*	53	82	25	n.a.
23	Rio Branco (T)	n.a.	n.a.	n.a.	0	26	n.a.	56	17	6	68	1	4*	27	153	16	n.a.
24	Acre (T)	n.a.	n.a.	n.a.	1	53	n.a.	22	60	4	19	10	4*	13	59	14	n.a.
	BRAZIL	9,800	206	244	6	523	981	58	3	13	255	60	67	480	212	161	332

Symbols: * Estimate. (T) Federal Territory. n.a. Data not available. A value of zero for population density indicates a density of less than 0.5 persons per Km².
Sources: All calculations, except as noted below are based on Appendix table. Gross Agricultural product; for 1951-54, Revista Brasileira de Economia, December 1955; for 1955, Ibid., December 1956



MAP I AVERAGE RESOURCE DEVELOPMENT INDEX

index is similar to per capita income calculated for an entire state, which also fails to account for differences in income among small areas.

For this reason, small states within the productive litoral zone of Brazil tend to have higher indexes than states, such as Bahia or Minas Gerais, which extend over enormous areas of largely unproductive land. The accident of political boundaries, however, is not without economic significance and, from the viewpoint of economic policy, states do represent economic units that may be treated significantly as a whole.

Finally, individual index numbers are based variously on data for 1950, 1953, and 1955 and, in the case of land resources, on an average of five years (1951-1955). In view of the relative stability of the indexes over the short-run however, this probably does not constitute too great a disadvantage in assessing the current situation.

MAP II INCOME PER CAPITA . 1955

The Weighted Average Index

The average resources development index was weighted with income per capita in 1955 (calculated as an index relative to the median) because it was felt that income might be an additional important variable if one wished to use the index as a basis for predicting the relative attractiveness of an area for private capital investment. The major argument in support of this reasoning have already been set forth and the results are shown in Table I, column (o).

In a perusal of these results, the enormous superiority of Rio de Janeiro and São Paulo are immediately apparent. By comparison, other regions, especially those which rank below Minas Gerais, appear relatively unattractive, offering but insignificant advantages to a private investor who considers alternative locations within Brazil. Reliable data on capital investment, by states, are not available, but some indirect proof of this contention can be obtained by comparing the weighted average index with

percentage growth of income between 1948 and 1955.

State	Weighted Average Index[1]	Total Income Percentage Increase 1948–1955[2]
Rio de Janeiro	3042	225
São Paulo	2174	256
Rio Grande do Sul	741	277
Paraná	495	386
Santa Catarina	398	235
Espírito Santo	240	292
Minas Gerais	215	226
Pernambuco	192	181
Sergipe	121	184
Paraíba	100	196
Mato Grosso	93	275
Alagoas	90	161
Rio Grande do Norte	80	183
Bahia	76	218
Goiás	65	424
Ceará	56	178
Amazonas	52	180
Pará	43	189
Maranhão	21	239
Piauí	18	170

[1] See Table I.
[2] Calculated from appendix Table. See also Map III.

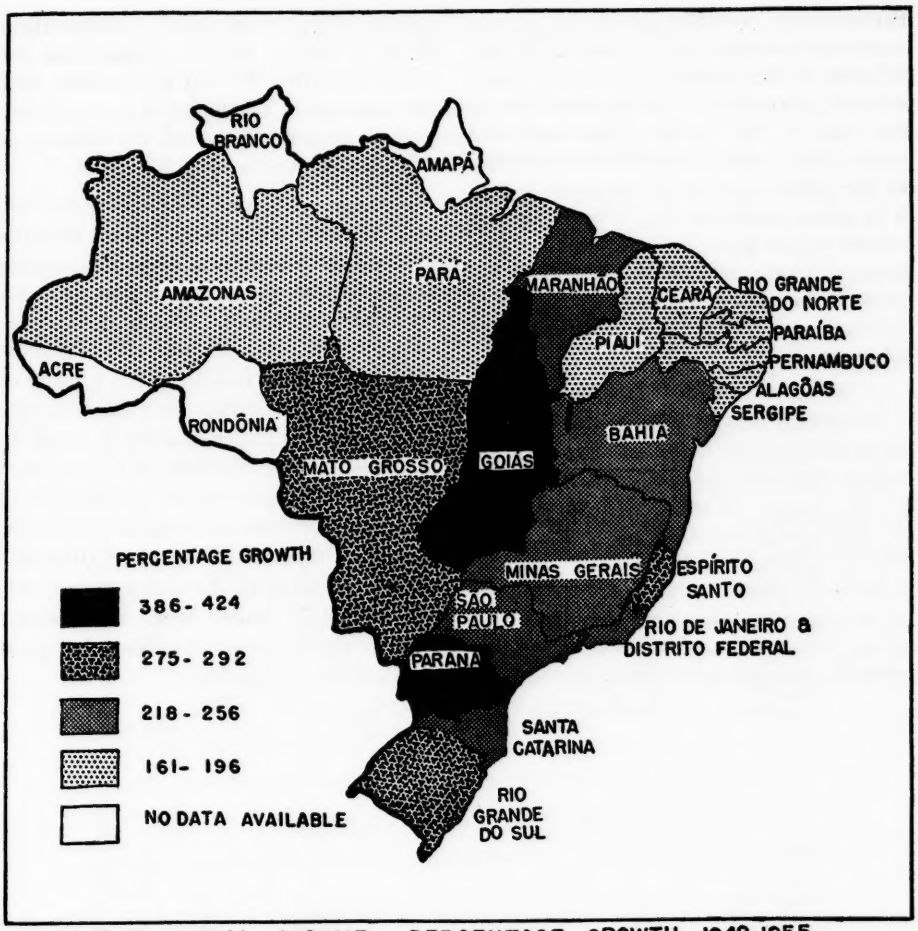
Although no point-to-point correspondence can be established between the two variables, it appears that states which have a relatively high weighted average index on the whole also experienced the highest growth rates of total income during the period. Striking exceptions are formed by Goiás, Mato Grosso, and Maranhão. These states, however, had exceedingly low incomes at the beginning of this period and their absolute income gains were consequently minor. By far the greatest proportion of the increase in total income accrued to states like São Paulo, Rio de Janeiro, Rio Grande do Sul, and Minas Gerais which, together, absorbed 72 percent of the gain in income for Brazil during the period in question (see appendix table). To the extent to which income growth requires capital investment, it may be permissible to infer that the weighted average index does, in fact, correspond, though imperfectly, to economic reality as evaluated by potential capitalists in search of investment opportunities. It must be added that one of the reasons for the imperfect correlation in the table above undoubtedly is the high rate of public investment in Brazil which, of course, is not guided exclusively by the apparent attractiveness of an area for economic activity.

Efficiency in Resource Use

As has already been observed, there are some "oddities" in the relation of the average index to per capita income which require explanation. Some examples of what is meant are provided in the following table:

State	Absolute Values		Rank Order	
	Index	P. c. Income	Index	P. c. Income
Santa Catarina	219	Cr.$ 8,700	4	6
Paraná	202	11,700	5	4
Pernambuco	186	4,900	6	11
Bahia	78	4,600	14	13
Mato Grosso	43	10,300	16	5
Amazonas	38	6,600	19	9

Santa Catarina and Paraná, with similar development indexes, have considerably different per capita incomes. A like comparison can be made between Paraná and Pernambuco. On the other hand, Pernambuco and Bahia have nearly the same income but vastly different resources indexes. Finally, there is the case of Mato Grosso and Amazonas which rank 16th and 19th in order of value for the index, but 5th and 9th in order of income per person. The problem is to explain these anomalies. In the first place, it may be suggested that the observed differences are due to differences in the efficiency of resources use: a high resource complement, as measured by the index, may produce a low income relative to population (Pernambuco) or high income (Paraná); a low resources complement may produce high income (Mato Grosso, Amazonas) or low income (Bahia). According to this schema, resources appear to be used



MAP III TOTAL INCOME: PERCENTAGE GROWTH 1948-1955

with relative efficiency only in Paraná, Mato Grosso, and Amazonas.

Efficiency in resource use may be partially influenced by conditions in the labor market. Both Mato Grosso and Paraná are relatively sparsely settled pioneer regions where labor is at a premium and tends to be used efficiently and consequently is highly paid. The reverse situation, namely labor surplus, is the condition typical of Pernambuco and Bahia, areas whose rate of economic change is quite low and which therefore offer few new opportunities for employment. Labor surplus, however, makes for inefficiency and low wages.

Another consideration in regard to efficient resource use is the organization of space. Cattle raising is the principal activity in Mato Grosso from which a small but highly educated population is drawing huge profits. At this stage in the development of the Mato Grosso economy cattle raising may well represent the most efficient use of the resources of the State. In the case of Bahia and

Pernambuco another situation is encountered in that the economically useful area of the former represents a much smaller percentage of total area than in the case of the latter. Had only the economically useful area been considered in the calculation of the average index, it is quite probable that closely similar values would have been obtained. The space-economy of Pernambuco thus appears to be better organized than that of Bahia, and therefore more productive and efficient.

Concluding Remarks

The usefulness as well as the inherent limitations of an index of resources development for the study of economic growth have, it is believed, been demonstrated in this paper. Its primary utility lies in providing a measure, complementary to other measures, of the level of economic development achieved by a given area in relation to itself or to other areas at any point in time. It may also shed light on the structural configuration of an economy and its possibilities for future growth. In this connection, too, the concept of efficiency in resource use may be important though the validity of this concept needs further testing.

Further refinements of the index are possible and some suggestions towards this end have been advanced throughout the text. Calculation of the present index for Brazil was limited by the data available for this purpose, and this is a difficulty likely to be faced in such a study of any part of the world. But the ultimate purpose of this paper was not so much to to come up with definite and conclusive answers as to open up the possibilities of a new approach to the study of economic growth. If successful in stimulating discussion on some of the issues raised, this purpose will have been well served though the index may suffer substantial revisions in the process.

APPENDIX BRAZIL: REGIONAL DATA AND RESOURCE DEVELOPMENT INDICES y/

Rank	State or Territory	Total Income (Millions Cr.$) 1948	Total Income (Millions Cr.$) 1955	Total Population 1955 ('000)	Area (1000 Km²)	Electric Energy Capacity Installed on 12-31-1953 (kw)	Cultivated as Percent of Total Area 1951-55	Economically Active Population - 1950 ('000) Total	Agriculture	Extractive Industry	Manufacturing Industry	Resource Development Indices (Absolute numbers) Urban 1950	Transport 1955	Land 1951/55	Industrial 1953	Re-HH 1950
1	Federal District	30,018	109,080	5,333	44	831,519	39.97	1,696	316	26	407	7,782	52	118	78	38
2	Rio de Janeiro	52,725	188,921	10,330	247	1,257,128	54.71	3,435	1,149	44	801	2,255	43	156	54	34
3	São Paulo	55,333	57,856	4,673	282	111,894	61.32	1,393	825	20	163	951	28	55	14	27
4	F. D. do Sul	4,658	15,661	1,800	95	58,857	26.82	474	298	20	62	237	34	53	27	15
5	Santa Catarina	6,745	32,783	2,807	201	69,219	20.35	1,120	471	20	77	474	19	84	29	9
6	Paraná	6,702	18,836	3,824	98	151,813	20.37	1,120	738	10	121	1,053	19	64	19	12
7	Espírito Santo	1,802	7,071	984	45	14,275	26.43	277	203	11	16	282	35	63	7	6
8	Sergipe	1,069	3,031	703	22	18,380	24.98	211	141	4	23	220	17	44	13	2
9	Minas Gerais	19,705	64,208	8,287	587	336,773	14.57	2,403	1,618	5	219	1,503	21	84	17	15
10	Paraíba	2,454	7,268	1,883	57	21,193	15.17	517	404	4	33	469	28	47	9	5
11	Alagoas	1,559	4,071	1,173	28	25,168	22.69	392	268	7	33	364	14	32	11	3
12	R. G. do Norte	1,554	4,401	1,069	53	25,255	13.79	387	268	10	13	350	16	29	6	3
13	Ceará	3,728	10,373	3,067	149	86,360	22.11	803	597	9	32	496	9	39	5	3
14	Bahia	7,787	24,774	5,380	563	169,556	9.86	1,516	1,068	57	122	731	6	17	5	6
15	Goiás	1,693	9,177	1,478	623	5,598	29.60	363	297	9	15	131	4	6	2	6
16	Mato Grosso	2,077	6,015	583	1,255	8,130	16.39	157	99	2	13	171	1	2	1	2
17	Pará	2,697	6,062	1,241	1,230	9,725	1.40	352	166	12	24	1,183	1	3	1	11
18	Piauí	1,010	2,728	1,185	253	8,666	9.08	304	247	5	11	412	1	1	1	5
19	Maranhão	1,535	3,732	1,367	1,366	6,331	0.09	157	58	58	9	289	1	5	1	5
20	Amazonas	1,665	5,433	1,796	332	2,700	11.89	489	364	42	17	197	2	1	1	5
21	Território do Acre	...	...	49	243	699	0.01	14	3	7	1	68	1	1	1	1
22	Amapá	...	...	50	137	206	9.69	12	4	3	0	27	1	1	1	1
23	Rio Branco	...	...	22	231	58	2.21	6	3	1	2	81	1	1	1	1
24	Acre	...	...	138	153	725	0.76	39	8	23	2	1,108	6	16	1	1
	BRAZIL	167,845	575,539	58,633	8,514	3,064,554	14.98	17,117	9,897	483	2,231					

y/ For method of constructing indexes, see text. */ Estimate.

SOURCES:

Income: Fundação Getúlio Vargas.
Electric Energy: Revista do Clube de Engenharia, September, 1956.
Cultivated Area: Instituto Brasileiro de Geografia e Estatística, , Anuário Estatístico for 1952, 1955 and 1956. Both crop land and cultivated pastures are included. Estimates by Bahia Institute of Economics and Finance.

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Development of Urban and Regional Planning in India

By J. WOOD*

INDIA has characteristically drifted with history, rising periodically to accomplish great things. In no field has this been more true than in town planning. From prehistoric Mohenjo Daro, to the imperial city of New Delhi, to Corbusier's Chandigarah, India has pioneered in town building. The technique of diagnostic survey, commonplace in planning practice today, is the somewhat belated result of Patrick Geddes' work in India four decades ago: the City Improvement Trusts in existence since the 1800's are models of their kind.

India, moving rapidly from a rural society to an industrial one, is faced with a crash development program to maintain and expand its economy.

The Economic Milieu

The critical problem is that of assisting the millions of restless people to achieve decent standards of living.

Since gaining its independence in 1947, the central objective of its public policy has been a rapid and hopefully balanced economic development. While the progress has been encouraging, the program is demanding and precarious; it could not be otherwise. India has a land area equivalent to about forty percent that of the United States and an estimated population of 377 million increasing by 5 million persons annually! The pressure of its resources and capital is almost incalculable. Seventy percent of the nation's labour force is on the land. Fragmentation of land holdings have reduced the farm to an uneconomical unit.[1] Low production on both the land and in the factory—insufficient to meet the minimum essential needs of the population—makes capital formation slow if not quiescent. The strain is evident. Whereas emphasis was on agriculture under the First Five Year Plan, the Second Plan stresses basic industry. Progress has been made but an increasing strain on the economy is resulting from the rapid expansion of capital-intensive industry and the inflationary trends in the economy.

It is within this milieu that contemporary town planning must be viewed. In a period of rapid national industrialization and urban growth, planning should precede or at least accompany development at every stage. Paradoxically, while economic programming is a recognized function of government, physical planning is largely neglected; the bulk of development (new towns, housing, industry, etc.) is occurring without full knowledge of its implications or consequences. The Planning Commission[2] recognized this when it said: "Unless there is adequate forethought and planning, industrial progress will be accompanied by serious social and other problems in urban areas which (sic) may become increasingly difficult to manage."[3] The danger is not exaggerated.

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[1] In West Bengal less than five acres. The land is cropped once a year, producing rice.

[2] The Planning Commission of the Government of India is responsible for national economic planning and programming.

[3] Government of India Planning Commission, *Second Five Year Plan* (New Delhi: Publications Division, Government of India, 1956), p. 568.

The Status of Town Planning

The urban problems are not all of recent making. In India the urban situation had become serious because of the large increase in population since 1921. While the percentage increase for the nation as a whole was 11%, 14%, 3% and 13.4%[4] respectively, for the decennial periods 1921-1951, the urban areas increased by 21%, 32% and 54% respectively, during the same periods. The urban drift is continuing unabated. The heavy shifts of population are the result of the lack of adequate employment opportunities in the villages and the attraction of relatively high wages and amenities in the towns. Unemployment and particularly underemployment in agriculture stimulates this tendency. Since 1947 when the country was partitioned, there has been a heavy influx of refugees into urban areas.[5] The number of towns with populations in excess of 100,000 doubled in the twenty years prior to 1951. Today Greater Calcutta counts a population of about 5 million while Bombay and Delhi have populations of 3 and 1 million, respectively.

Planning and development have not and perhaps could not keep pace. In contrast to the examples of New Delhi and Chandigarh most towns in India have grown haphazardly. They have a large proportion of substandard houses and huts of flimsy construction, poorly ventilated, over-congested and often lacking in the essential amenities. This is especially true in the large industrial centers such as Calcutta with its "bustees," but it is commonplace in every town.

The lack of adequate legal powers to control the use of land and the construction of buildings has aggravated the growth of slums. But equally important, to quote one official, is the fact that "state and local governments have not exercised the powers available to them or have fully appreciated the gravity of the situation." In the First Five Year Plan the Planning Commission noted: "It is highly desirable that there should be a policy in the matter [of planning] and we recommend there should be a national Town and Country Planning Act."[6] Although the directive was clear, no action was taken and the recommendation was not included in the Second Five Year Plan. As drafted the proposal was perhaps untenable. With local government powers under the constitution vested in the states a strong central planning act (after the British pattern) is hardly possible.[7] In the absence of a central Act the states are left to carry out their own planning programs subject only to minimum control (principally in the form of budgetary control of development projects where central funds are involved) from Delhi.

But what may be the forerunner of a national planning organization was established by the Central Government in 1956. Under the aegis of the Ministry of Health a special development authority was created and charged with, among other things, the preparation of a master plan for the Delhi Region.[8] The Town

[4] Contrary to popular opinion the rate of population increase in India is relatively modest. The annual rate of increase (percent) was 1.02 between 1921 to 1931, and 1.41 between 1931 to 1941, United Nations, *Demographic Year book* (New York: United Nations, 1955), p. 138.

[5] Refugee towns have been built to accommodate some displaced persons, two being Nilokheri and Faridabagh near Delhi. Up to the end of 1956 some 8.7 million persons had migrated to India from Pakistan. Ministry of Information, *India, A Referendum Annual 1957* (New Delhi, the Publication Division, 1957) p. 147.

[6] Government of India Planning Commission, *First Five Year Plan* (New Delhi, Publications Division, 1952) p. 603.

[7] The Constitution is modeled on the United States Constitution. Powers are divided into three groups: those reserved to the center, those exclusive to the states, and a concurrent list shared by both the center and the state.

[8] The Organization's activities are at present confined to the Greater Delhi area. At the request of the Government the Ford Foundation in 1957 engaged a team of American planners headed by Albert Mayer to assist the Organization.

Planning Organization, as it is known, is staffed by young and able planners, many of whom were trained abroad. Although a central planning organization is not specifically mentioned in the Second Plan there is strong feeling in Delhi and among planners in general that a central agency is essential. This is patently true. The Central Government which has so often in other matters taken the lead has been comparatively inactive in the field of town and country planning. The present Town Planning Organization may form the nucleus for this larger central authority. A step in this direction was taken in May of this year when a memorandum offering the services of the Organization was sent to the state governments.

On the state level some progress has been made in enacting planning legislation and setting up planning agencies. The results have not all been entirely satisfactory. In several cases efforts were made by some states to abolish or merge planning departments with the public works department. Nevertheless, the Second Plan largely places the onus of planning on the states. If planned urban development is to be undertaken, said the Planning Commission, "each state should have a phased program for the survey and preparation of Master Plans for all important towns."[9] The Commission noted that, in order that this might be accomplished, town and country planning legislation should be enacted in all states and the necessary machinery for its implementation should be set up.[10]

Steps in this direction have been taken by some of India's fourteen states although the results are by no means uniform. While most of the states have acts captioned "planning," only four states are acknowledged to have workable legislation: Uttar Pradesh, Madras, Bombay and Bihar. In general these acts are similar in construction and scope. These four states were also the first to enact planning legislation. Planning in Uttar Pradesh dates from 1915 when Patrick Geddes was invited to Lucknow to advise on planning schemes. In 1919, the Town Improvement Act, which is still the basis for town planning today, was enacted and Improvement Trusts were established in the major towns. It was not until 1947 that a planning department was established in the State Government. Earlier, Bombay Presidency had enacted the Bombay Town Planning Act of 1915 (it had an independent "Town Planning and Valuation Department" as early as 1914) providing for the preparation of statutory plans. Under the act local authorities were both the initiating and executing bodies, the state planning department's sole function being advisory. The Bihar Town Improvement Act, passed in 1951, avoided this drawback by reserving the right to act in cases of default by the local authorities. The optional nature of the Bombay Act led in 1954 to the consolidation and amendment of the earlier Act, making it obligatory upon local authorities to prepare master plans.

The Madras Town Planning Act was passed in 1920. Typical of the state acts, it provides that every "municipal council . . . . shall . . . . prepare, publish and submit for sanction of the State Government a general town planning scheme in respect of all land within the Municipality and in its vicinity . . . ." The Act provides for a state planning department, local (and joint) planning committees, town planning (improvement) trusts, and compensation and betterment and land acquisition among other things.

[9] Government of India Planning Commission, *Second Five Year Plan*, p. 569.
[10] *Ibid.*, p. 570.

In these states the weakness in the planning system lies not in the legislation but in administration. Although the states may direct local authorities to prepare master plans, the municipalities are in no way prepared to carry out the edict. Citing the added financial burden as the reason, few municipalities have undertaken comprehensive planning programs. This argument is not without substance. Local revenues are stretched especially in the smaller towns which do not have an industrial base and the device of grants-in-aid is not yet employed. However, lethargy, too, plays its part. Grass-roots support is an essential ingredient in town planning and legislation, *sine qua non*, does not replace civic education.[11] The planner is faced with the task of gaining public acceptance for his work as well as having government support.

In this respect as well as in carrying out the technical work of planning, progress is retarded by the shortage of staff. Personnel is a critical factor. Those states with the desire to go ahead with planning projects are handicapped by the lack of trained and experienced planners. For example, Bihar with a population of 40 million has only two qualified planners in the entire state. Other states face the same problem for in all of India, according to one authority, there are no more than one hundred professional planners. The scope of work that can be undertaken is of course limited. "As it is rarely possible to make more than a cursory survey of towns with the one or two planning officers of the town planning department," so the Director of Town Planning of the Government of Madras put it, "the recommendations are naturally very limited in scope." The personnel problem should change in time: Two post-graduate schools of planning have been established by the Government and courses in planning are offered in several schools of architecture and engineering.

With all these handicaps of limited funds and paucity of personnel the surprising thing is not that so little has been done but that so much has been accomplished. The Uttar Pradesh planning department has prepared more than 2,400 schemes including some sixteen master plans in progress. Some ninety schemes have been sanctioned in Madras. A preliminary master plan for the City of Madras has just been completed. All four states have drafted and executed a variety of specific planning schemes.

Diametric to these efforts is the complete absence of planning in some of the major industrial centers of India. West Bengal, one of the most densely populated states with the highest concentration of industry, is without planning legislation of any sort. Calcutta, the industrial capital of India with a population of five million, does not have a planning agency or qualified planner on its staff. (This is not to overlook the pioneering and valuable work of the Calcutta Improvement Trust.) Although faced with traffic problems, port congestion, rapidly expanding industry (not to mention the largest slum clearance and housing problem in India) there has been little official support to establish planning in the state or corporation governments.

Between these two extremes are those states that, although without all the necessary legal tools, are nevertheless attempting to deal with the myriad problems of urban development. Assam, a rural state in India's rugged eastern

[11] Of this Patrick Geddes said: "The measure of the success of a city survey depends upon its appeal to the individuals that compose the city . . . for such work, moral influence and energy are needed in no small measure. This must not however be expressed by an authoritative attitude that ignores apathy and overpowers opposition." Patrick Geddes, *Town Planning Toward City Development: A Report to the Durbar of Indore, 1918*, p. 166.

frontier, created an independent department of town planning in 1955. As an advisory body to the Government the department is charged with drafting a comprehensive planning bill and with preparing master plans for the major towns of the state. Kerala, on the south coast, passed a limited planning bill in 1923, followed by an amended act in 1945. Mysore, Madhya Pradesh and Punjab all have planning departments that assist muncipalities in drafting and executing local planning schemes.

The void in many cases has been filled by the Improvement Trusts. The improvement trust has been a feature of Indian cities since 1898 when the Bombay Improvement Trust was created. A quasi-autonomous body created by the state, after consultation the municipality, the trusts are empowered to draft and carry out planning schemes within the area of their jurisdiction. The Calcutta Improvement Trust is representative. Organized in 1912, the work of the trust has been largely that of clearing areas for street widenings and openings together with slum clearance and housing projects. Faced with legal obstacles in land acquisition and the high cost of land, the most important work—slum clearance and rehousing—has been relatively limited.

The Trusts are neither equipped nor staffed to undertake comprehensive planning. (Although in the case of Calcutta what planning has been done has been by the Improvement Trust). There is seemingly a tendency to look upon the Trusts as town planning agencies, wistfully so. However, as one planner put it, "it cannot be seriously suggested that Improvement Trusts have made an attempt even to touch the fringe of town planning. All that the majority of Improvement Trusts do is to make available . . . . building plots in the outlying areas on a more or less commercial basis, often without regard to the elementary principles of town planning. The extensions are left to the tender mercies of the very local authorities whose sins of omission and commission made the establishment of the Trusts necessary."[12] Perhaps this criticism is too harsh; certainly it flails the wrong party. The Trusts have in general filled a void and have accomplished much, albeit limited in scope, in urban development. It remains, however, that the Improvement Trusts and most of the large municipal corporations function without qualified planners on their staffs.

The Training of Staff

Provisions were made in the Five Year Plans for the expansion of existing institutions for the training of town planners. Three schools now offer degrees in town planning: Bengal Engineering College of Calcutta University, Indian Institute of Technology, and the School of Town and Country Planning of Delhi. Established on the lines of the British planning schools these schools have granted 27 professional degrees since their founding. With no more than 50 qualified planners available and an annual output of only about 15, any upsurge in planning activities will overtake the output of professional planners. Committed by its policy to undertake master planning projects for the major cities' industrial development areas and the river valleys, the country is faced with a dearth of talent to carry out its schemes.

Conclusion

One needs to hesitate before criticizing town planning and development in India for the enthusiasm and vitality of the pioneering spirit behind it is impressive. But much is yet to be done. The

[12] Quoted by M. Fayazuddin in his Presidential Address to the Institute of Town Planners, May 1952.

magnitude of the urban problem is enormous. The problem if not now unmanageable is rapidly becoming so with the increase of population and the continuing and uncontrolled growth of urban areas.[13]

It is imperative that the states enact workable legislation for planning, housing and slum clearance. Since only the larger municipalities will be in position to recruit a qualified planning staff, the states must largely assume the task of preparing and carrying out plans for the smaller towns, villages and development areas. In this the Central Government must assume greater leadership. Support and technical advice must be given the states to enable them to organize and administer effective planning programs. In turn, the Central Government must crystallize its own housing, slum clearance and urban development programs within the context of comprehensive urban planning schemes. A better working relationship together with a sufficient and equitable distribution of funds is needed to meet the development needs of the cities and towns. Additional schools of planning are required to increase the output of trained planners and to undertake research in manifold problems of urban growth and development.

Above all, on all levels of government and elsewhere, there is a pressing need to recognize the urgency of the urban problem. Development—wise or unwise—will take place with or without planning. Boldness, imagination and resourcefulness are needed to solve the problems faced by urban areas just as they are for national economic progress. India's plans for urban development, or her schemes for rural welfare, or her efforts toward exploitation of resources and industrialization to raise the standard of living are all part of one pattern. If the rewards of economic development are to be realized far greater attention must be given to the urban areas which, after all, are the center of the country's productive machine, and the fountainhead of economic progress.

[13] For example, despite the fact that 1.5 million houses were built in the period 1951-56, and another 2.1 million will be constructed between 1956-61, with the anticipated growth of population the shortage of housing units will rise from 2.5 million in 1951 to 5.3 million by 1961.

The Strength and Weakness of Western Housing Markets†

By DOUGLAS V. CANNON*

WESTERNERS, as a whole, are inclined to take for granted the continuing economic strength of that great region of the country known as the Far West but it would not be inaccurate to say that in such convictions of strength lie also the possibilities of human weakness. The West today is experiencing a rate and scale of growth in its economy which is of such speculative dimensions and so dynamic in character that, without prudent management and the exercise of self-restraint, business entrepreneurs run the risk of over-supplying the West's markets. The home-building industry is not immune from this risk either, for the industry is only as strong as the local economy which supports it.[1]

As urban housing markets are inherently local in character, this article is concerned primarily with economic developments in the urbanized areas of the western region, herein defined as the eleven states west of the Rocky Mountain Divide and the territories of Alaska and Hawaii. Within this western region, which contains nearly one-half the land area of the United States, live only one-sixth of the Nation's population; yet the region in 1956 supported a 12-billion dollar building industry which accounted for one-fourth or more of that year's construction boom in the United States.[2]

Over half the nation's population now lives in 169 communities officially designated by the United States Bureau of the Census as "Standard Metropolitan Areas." In the western region there are only 20 Standard Metropolitan Areas but they contain more than three-fifths of the West's population. Within the last decade, four-fifths of the Nation's total population increase took place within its metropolitan areas; and, in the first 6 years of the present decade, 85 percent of the total net increase was in these communities, four-fifths of it occurring in the suburban areas outside the central cities.[3] Trends toward rapid industrial and population growth in a relatively few highly concentrated urban areas are equally true of the West as of the Nation.[4] For example, 4 out of 5

† The market research findings for this article were originally presented at the Second Annual Conference on Community Development for the West, held January 15, 1957 in San Francisco and sponsored by the Housing and Home Finance Agency, Region VI. The present article does not attempt to take into account developments in the housing markets of the West subsequent to that date other than to substitute, wherever feasible, final estimates of data for preliminary figures previously used.

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[1] For a recent comprehensive analysis of national and regional trends in the components of housing demand and supply see Oscar F. Litterer and Leland O. Lehman, "Housing and Mortgage Markets," *Monthly Review Supplement*, September 1956 (Federal Reserve Bank of Minneapolis).

[2] The magnitude and importance of the Nation's construction industry is reflected in the fact that estimates of new construction put in place in 1956 totalled $46.1 billion, 38% of which was *private* home-building, 34% *private* industrial and commercial building, and the remaining 28% *public* works construction. The output of the entire industry in 1956 accounted for 11% of the gross national product for that year. The West's share of the national construction market, which includes outlays for military, reclamation and highway construction, is conservatively estimated at 25%. See *Economic Report of the President*, January 1958, p. 151.

[3] United States Bureau of the Census, *Current Population Reports*, Series P-20, No. 71, December 7, 1956.

[4] Ranked among the top 51 home-building areas in the Nation in 1956, according to *Construction Review*, Vol. 3, No. 8, September 1957, (U. S. Bureau of Labor Statistics), were the following ten Standard Metropolitan Areas of the West: Los Angeles, San Francisco-Oakland, San Bernardino-Riverside-Ontario, San Diego, Denver, San Jose, Phoenix, Seattle, Sacramento, and Salt Lake City. Highest ranking area in the Nation in volume of building in 1956 was Los Angeles (89,300 units) followed in sixth place by San Francisco-Oakland (22,000 units), San Bernardino-Riverside-Ontario in eighth place (17,200 units) and San Diego in eleventh place (13,300 units). In terms of current building rates per 1,000 population in 1950, San Jose, San Bernardino-Riverside-Ontario, Phoenix and Sacramento rank among the six fastest expanding home-building areas in the country.

new dwelling units authorized for construction in the West in 1956 were in metropolitan areas, 71 percent of which were in suburban areas, only 29 percent in central cities. Moreover, 3 out of 4 dollars expended in the West for *nonresidential* construction were spent in this region's 20 metropolitan areas, two-thirds of which were spent in the suburbs of these areas.[5]

Strength of Western Housing Markets

What are the most important elements of strength and weakness in the urban housing markets of the West? To answer the first half of this question, seven sources of strength in western housing markets are catalogued below, the relative importance of each source varying with the economic base of each community:

(1) *Continued Growth of Urban Population and Households.* The most significant of all housing market trends in the West is the continuing rapid growth of its urban population and households.[6] Together these two factors constitute the primary source of housing demand.

The greatest single impetus to urban growth in the West is the *westward movement of population.* The "westward movement" is not a dance step invented by Horace Greeley—it is an established long-term trend, recently accelerated by favorable economic conditions throughout the Nation and further stimulated by expanding employment opportunities in the West. In the first 6 years following the 1950 Census, the *rate* of population growth in the West, including Alaska and Hawaii, was more than two and one-half times that of all the remaining states combined, 23 percent compared to 9 percent. Whereas the West contained slightly less than 15 percent of the total United States population in 1956, it accounted for 28 percent of the Nation's total net additional growth between 1950 and 1956.[7] Estimates prepared by the California State Department of Finance show that, in the 6 years since the 1950 Census, 63 percent of California's population growth has resulted from net migration, only 37 percent from natural increases.[8] Since 1950 the Nation's population has increased by nearly 20 million, an increase greater than that of the current population of Canada; and demographic experts anticipate a national rate of growth equal to 18 percent in each of the next two decades. Not only will the urban communities of California and the West share in this new era of expansion but there is every reason to believe that the West will continue to benefit from an influx of population and households to a degree exceeding that of any other region of the country.

Population experts report that the *rate of family formation* has been on a downward curve in the United States over the last ten years, principally as a result of the low birth rate in the middle 1930's and the consequent decline in population of marriageable age levels in the 1950's. Statistics would appear to bear the

[5] United States Bureau of Labor Statistics, *Construction Review*, Vol. 3, No. 4, April 1957.

[6] A household, which is the most important unit of housing demand, is by Census definition equivalent to an occupied dwelling unit. Unfortunately, current household trend data are not enumerated for regions or states. For the United States the number of *urban and rural nonfarm* households increased 7,046,000 or 19% in the 7-year period March 1950 to March 1957, equivalent to an average annual increase of approximately 1,000,000 occupied dwelling units. See United States Bureau of the Census, *Current Population Reports*, Series P-20, No. 76, July 5, 1957.

[7] According to final estimates of the United States Bureau of the Census, *Current Population Reports*, Series P-25, No. 168, December 9, 1957, total population in the U. S. increased 11% in the first six years since the 1950 Census as compared with the following population increases in the West: Alaska 60%, Nevada 60%, Arizona 45%, California 27%, Colorado 25%, Utah 20%, New Mexico 19%, Hawaii 17%, Oregon 14%, and Washington 12%. Only Montana, Idaho and Wyoming had population increases below the United States average.

[8] Carl M. Frisen, *California's Population in 1957* (Sacramento: California State Department of Finance) July 1957, p. 13.

experts out, as witness the decline in the marriage rate from a peak of 16.4 per 1,000 population in 1946 to 9.4 per 1,000 population in 1956.[9] But there are two reassuring facts for those in the business of building and marketing homes: (1) despite a general decline in the rate of family formation there continue to be over 1½ million marriages performed each year in the United States; and (2) while marriages are expected to continue at a low *rate* in the next few years, the trend is certain to be reversed by the early 1960's as the unusually high birth rate of the postwar period is reflected in increasing numbers of young people coming of marriageable age. Moreover, it has been demonstrated that a national decline in the *rate* of family formation, such as is now occurring, does not necessarily reduce the number of families migrating to the West. New families formed by marriage in the West, including Alaska and Hawaii, totalled 272 thousand in 1956, an *increase* of nearly 3 percent over 1950 as compared with a 7½ percent *decrease* in marriages for all other areas of the country.[10] Measured by size of the resident population, marriages in the West in 1956 were at a rate of 10.9 per 1,000 population, as compared with a marriage rate of 9.1 per 1,000 population for the rest of the United States. If economic and international conditions are favorable to the Nation's business and population growth, a rapid increase in marriages and households beginning in the early 1960's should prove to be a "market of gold" for home-builders everywhere but particularly in the West!

A characteristic of major significance in the rapid growth of the West since the end of World War II has been the *mobility of population* which moved westward and the fact that this migrant population is predominantly comprised of young adults between 20 and 34 years of age who are motivated mainly by job opportunities in the West.[11] High rates of family migration not only have an immediate impact on the market for housing, household goods and services, but the fact that rates of migration to the West are highest among young households means a continuing higher-than-average increase in the West's preschool population, hence in the demand for school construction. Population mobility—not only between and within states but within cities and metropolitan areas—will continue to be the most important source of demand for urban housing and community facilities in the West. That this will be true would appear to be convincingly supported by Census statistics which indicate that each year one person in five in the United States moves to a new address. This means that in the year 1957 some 34

[9] United States Department of Health, Education and Welfare, *Monthly Vital Statistics Report*, Annual Summary for 1956, Part I, Vol. 5, No. 13, March 12, 1957. Crude marriage rates in the United States were estimated to be 9.2 per 1,000 population in 1954, the lowest marriage rate since the bottom of the depression in 1933. After 1954 the trend of marriage rates turned slighly upward and continued a slow rise up to mid-1957 when the trend apparently met resistance of the current economic recession.

[10] *Ibid.* See also United States Bureau of the Census, *Statistical Abstract of the United States*, 1957. Not all parts of the West experienced an increase in marriages in 1956 over 1950, e.g., only states to report increases were California (10.4%), Arizona (10.4%) and Nevada (9.1%). Latest annual report for Aalska (1955) showed an increase in marriages of 11.2% over 1950. Marriage *rates* per 1,000 population in 1956 were below 1950 in every part of the West but Idaho.

[11] See Howard G. Brunsman and Henry S. Shryock, Jr., *Population Migration—Who's Moving Where, and Its Meaning to Marketing People*, presented at the winter conference of the American Marketing Association (New York City), December 27, 1955. Brunsman and Shryock make the significant point that, "migration is not of equal importance to all segments of the population, that young adults have the highest migration rate, and stability increases as people become older," e.g., of the net migrants to California between 1940 and 1950, young adults between 20 and 34 accounted for 40% of the 1950 population in this age group; in contrast, migration to California during this decade accounted for only 14% of people 65 years of age and over. In addition to high migration rates among young households, particularly in age brackets 20 to 24, migration rates are reported to be highest among college graduates, professional, managerial and sales occupations, and among men with higher-than-average incomes (excluding transient workers).

million people were living in a different house from the one in which they were living in 1956. Whether population growth is epitomized by the "westward movement," the "trailer age," the "flight to the suburbs," a migration from farms to cities, a trend to job opportunities and to resort areas, or simply by families upgrading their housing standards within cities, such migrations all add up to a continuing change in the demand for urban housing and a "whale of a lot" of tenant turnover and real estate transfers. Historically and currently, there is no better example of the restlessness of America than the mobility of the people who make up the population of the West.

(2) *Continued Industrial Expansion.* The great impetus to the development and expansion of industry in the West since the early 1940's and the 1950's to date has been World War II, the Korean War, and industrial activities currently related to national defense. Much of this industrial growth was made possible by the development of the West's power and water resources in the 1930's. The West, including Alaska and Hawaii, continues to have the largest undeveloped natural resources in the United States. Industrial output, employment, and personal incomes throughout the Nation in 1956 were at their highest levels in history up to that time, with the result that gross national product or expenditure—the Nation's aggregate output of goods and services—rose to an estimated annual level of $415 billion or 6 percent above the year 1955.[12] That the West has shared in the country's industrial prosperity at a rate exceeding the Nation as a whole is illustrated by the fact that between 1947 and 1954, value added by manufacturing in the West, including Alaska and Hawaii, rose by 101 percent, as compared with an increase of only 53 percent in all remaining parts of the country combined.[13] Personal incomes in the eleven western states in 1956 rose 57 percent above the level of incomes reported in 1950, compared with a 42 percent rise in income for all remaining areas of the United States. Moreover, year-to-year gains in personal incomes in the West have exceeded those of other combined regions of the country for every year since 1949.[14] In the most recent boom period between 1955 and 1956 average annual nonfarm employment in the eleven western states rose by nearly 7 percent as compared with a gain of only 3 percent in all other areas outside the West.[15] A conspicuous feature of the 1956 business boom, and particularly in the West, was the increase in plant and equipment and other non-residential expenditures in contrast

[12] *Economic Report of the President*, January 1958. Gross national product is estimated at *current 1956* prices. Total GNP in 1956, computed *at 1957 prices*, is estimated by the Council of Economic Advisers at $430.3 billion or 3.1% above the level reported in 1955.

[13] United States Bureau of the Census, *United States Census of Manufacturers: 1954*, General Summary, Bulletin MC-201. Value added by manufacturing increased by more than the national average (58%) in every part of the West except Wyoming and Oregon, e.g., industrial growth in New Mexico was 293%, Nevada 263%, Hawaii 140%, Arizona 130%, Alaska 125%, Utah 116%, California 115%, Washington 77%, Idaho 66% and Colorado 65%. The State of California alone accounted for more than 70% of the value added by manufacturing in the West in the period 1947-1954.

[14] United States Department of Commerce, *Survey of Current Business*, 1929-1955 Supplement, Personal Income by States, p. 141, and 1954-1956 Series, August 1957, p. 11. All states in the West experienced a 1955-56 rise in personal incomes as follows: Arizona 12%, Idaho 10½%, California 9%, Colorado 9%, New Mexico 8%, Utah 7%, Wyoming 7%, Oregon 6½%, Montana 4½% and Nevada 3½%. The State of California accounted for 63% of the total personal income of the eleven western states in 1956, and 69% of the net gain in personal income in the West in the period 1955-1956.

[15] United States Bureau of Labor Statistics, *Employment and Earnings*, Vol. 3, No. 12, June 1957, and Vol. 2, No. 12, June 1956. In the period 1955 to 1956 average nonfarm employment in the eleven western states increased by more than the national average (3.6%) in every state except Washington, Wyoming, and Nevada, e.g., expansion of employment in Arizona was 11.6%, California 8.2%, New Mexico, 7.6%, Idaho 6.9%, Colorado 6.8%, Oregon 5.2%, Utah 5.1% and Montana 4.1%. California, which contained 60% of the total employed nonfarm labor force in the West, accounted for 70% of the net gain in employment in the West in the period 1955-1956.

to the previous year's boom in consumer spending and home-buying. Authorizations for new non-residential building expenditures in the West, according to government statisticians, were up 42 percent in the year 1956 compared with an annual increase of only 13 percent in all remaining areas of the United States.[16] As western industrial capacity expands and creates more opportunities for basic employment, the economic support of the West's metropolitan housing markets will continue to be strengthened.

(3) *Development of Military Installations.* While the military has always had a substantial part in the development of the West, at no time in history has this development been so much in evidence as during and subsequent to World War II and in the years since the ending of the Korean War. Every state in the West has benefitted in some degree, directly and indirectly, by an Army training camp, an Air Force Base, a Naval Base, an arsenal, a NIKE site, an ammunition depot, a Navy shipyard or some other type of military facility. Moreover, the economic benefits to the West from increased military payrolls and construction expenditures, and from the influx of military dependents have generally been far greater in proportion to the West's civilian population than benefits derived by other parts of the Nation. California is a good example. In 1952 California's share of the Nation's population was 7.3 percent, yet 18.2 percent of the Nation's total military personnel and 15.2 percent of the military's total civilian strength were located in the State of California.[17] Not to be overlooked is the fact that the military not only provides a basis for growth itself but it is a vital factor in expanding the markets for housing as well as all consumer goods and services. Military outlays for the purchase of goods and services for national security purposes in 1956 totalled $42.4 billion or 10 percent of our national output.[18] Moreover, the national budget submitted to the Congress by the President in January 1957 called for an expenditure of 53 cents out of every dollar budgeted for national defense. This was the highest peacetime military expenditure on record up to that time. That the West, including Alaska and Hawaii, will continue to share in the Nation's defense expenditures to a degree substantially in excess of its ratio of population is virtually certain.

(4) *Development of Industrial Defense Activities.* The postwar development and expansion of industrial defense activities in the West, including atomic research and stockpiling, scientific research and development centers for exploring space and testing guided missiles, jet engines, jet-propelled rockets, nuclear weapons, and military aircraft are by now a familiar part of the Western economy. The West has, among other resources, what these plants need most for the development and testing of new military weapons: "the wide open spaces." In addition, the West has such important and well-established industrial defense

[16] United States Bureau of Labor Statistics, *Construction Review*, Vol. 3, No. 4, April 1957. Data are based on building permit valuations, and *not* on estimates of "construction put in place." Whereas the West currently contains less than 15% of the total U. S. population, it accounted for 24% of the Nation's total valuation of building permits issued in 1956. The value of permits issued in 1956 for construction of industrial and public utility buildings in the West was up 116% and 68%, respectively, compared with a respective increase of 35% and a *decrease* of 10% in these types of heavy construction in all remaining areas of the United States.

[17] Sterling Brubaker, *Significance of Military Installations for California's Economic Growth, 1930-1952* (Bank of America, N.T.S. & A., San Francisco) May 1955. Subsequent estimates indicate that, whereas California, on July 1, 1956, contained 7.9% of the Nation's total *civilian* population, 17.4% of all military personnel in the U. S. were stationed in California. See United States Bureau of the Census, *Current Population Reports*, Series P-25, No. 165, November 4, 1957.

[18] *Economic Report of the President*, January 1958. Out of every 10 dollars spent by the Federal Government in 1956 for the purchase of goods and services, 9 dollars was spent for national security purposes.

activities and resources as ship-building and ship repair, aircraft production, oil drilling and refining, electro-metallurgical plants, synthetic rubber plants, strategic mineral resources such as uranium, titanium, copper, lead and zinc—all of which are vital to the Nation's security and vital to the economy of the West.

(5) *Advancements in Air and Highway Transportation.* Considering the rugged geography and vast distances of the West, it would not be unreasonable to say that the West, including Alaska and Hawaii, stands to benefit more from the current development of commercial jet air-travel and from the proposed 27½ billion-dollar National System of Defense and Interstate Highways than any other part of the country. The principal objective of the Federal Highway Act of 1956 is the completion of a 41,000-mile Interstate System of high-speed expressways, all but 7,000 miles of which will be divided highways of 4 or more lanes with controlled access and no grade crossings.[19] By 1965 it is estimated that spending on Federal-aided highway projects will be double the current average annual rate. Whatever improves and speeds up transportation increases the movement of people and goods and shortens the time and long distances between cities and markets of the Far West. The beneficial impact that development of national jet airlines and interstate and intercity express highways will have on the economy of metropolitan communities in the West is clearly foreseeable.

(6) *Expanding Tourist Industry.* The temperate climate of the Pacific coastal areas and the Southwest, and the diversified scenic and recreation resources of the entire western region, are among the West's greatest economic assets. They provide the basis for a tourist-motel-resort industry in the small towns and urban centers of the West which has multiplied since the end of the War and which will continue to expand in direct ratio to the Nation's population growth, the rise in personal incomes and increases in national living standards. The West has "the wide open spaces" and the great national parks which the rest of the Nation lacks. For example, the eighteen National Parks in the eleven western states, Alaska, and Hawaii attracted 12½ million visitors in 1956, an increase of 53 percent over the 6-year period since 1950, and an annual 9 percent rate of increase in 1956 over 1955.[20] With increasing personal incomes, longer vacation time, earlier retirements, and improved transportation, more and more people can be expected to travel westward.

(7) *Outlook for Expanding Far Eastern Trade.* As the gateway to Asia and the Far East, the Pacific Coast cities in particular, as well as all western markets, would stand to benefit from policies directed toward the development of underdeveloped countries and the stabilization of political conditions in the Far East and the expansion of free trade between the United States and the Orient. It is no exaggeration to say that the development and expansion of foreign markets for western goods and services will strengthen the economic base of our western housing markets. That the vast

[19] See United States Department of Commerce, *Construction Markets*, No. 31, July 1956; and *Survey of Current Business*, Vol. 36, No. 12, December 1956. For the year 1956, capital outlays for all highways totalled $4.9 billion. Total federal-aid funds for highway construction through 1972 are now estimated at $38.5 billion. Together with required state-matching funds more than $50 billion will be spent over the duration of the current National Highway Program. For Maps and specific routes of 122 specific areas designated in September 1955, see United States Bureau of Public Roads, *General Location of National System of Interstate Highways*, Washington, D. C.

[20] United States National Park Service, *Public Use, Tabulations of Visitors to Areas Administered by the National Park Service, 1941-1952*, San Francisco; and United States Department of the Interior, *Quarterly Reports, 1953-1956*, Washington, D. C.

potential markets of Asia and the Far East will some day be re-opened to American industry seems inevitable.

Weakness of Western Housing Markets

In spite of the many favorable economic factors just described, there are elements of potential weakness in western housing markets. While the weaknesses that exist may be more psychological than real, they are nonetheless important to the home-builders and mortgage lenders who have the responsibility for decisions which affect so large a part of the West's multi-billion dollar housing business. Here are what appear to be six clearly recognized sources of possible weakness in western housing markets:

(1) *Dependence of Growth on Net Migration.* While a large and steady influx of out-of-area families has tended, up to now, to give home-builders in the West an economic advantage and a degree of confidence unknown to most eastern builders, the extent to which western builders must depend on this source of demand to maintain volume gives the industry a highly speculative character. In California, for example, 63 percent of the state's population growth since the beginning of the present decade is attributable to net migration which, together with natural increases, has given the state a rate of growth which is more than twice that of the Nation.[21] A large part of the Western market for new speculative tract housing is motivated, directly and indirectly, by the anticipation of a continuing influx of out-of-area families. Yet, "relatively slight changes in economic conditions have a significant effect upon population gains where migration is the major factor."[22] This is likewise true of industrial plants which have been known to locate in relatively isolated areas of the West in anticipation that labor would follow. Consumer-oriented industries as well are built in the West on a capacity scale which anticipates rapid growth based on in-migration in contrast to established markets. In such economic circumstances "venture capital" in a very literal sense is attracted to the West and, while essential to the West's commercial and residential development, it often leads to marginal types of financing. Thus, while growth based on in-migration has sometimes acted as a safety-valve to absorb temporary excesses in the urban housing markets of the West, it also has helped to give the region's home-building industry a speculative boom character which is without equal in any other part of the country.

(2) *Dependence of Economy on Construction Expenditures.* A continued higher-than-normal volume of construction expenditures is a characteristic common to all booms and the boom in the West is no exception. Because the West, including Alaska and Hawaii, is still a relatively undeveloped part of the country, construction expenditures of all types—industrial, military, public works, and housing—all tend to stimulate the economy of the West to a disproportionate degree. Whereas the West continued to contain less than 15 percent of the Nation's population in 1956, it accounted for over 26 percent of the new homes and 25 percent of the value of new commercial, industrial and public utility buildings authorized for construction in the United States.[23] In the industrial construction boom of 1956, expenditures in the West for all types of new *non-residential* construction totalled $1.6 billion, a net year-to-year gain of 42 percent, as compared with an increase of only 13 percent in all remain-

[21] Carl Frisen, *California's Population in 1957* (Sacramento: California State Department of Finance) July 1957.

[22] Frisen, *op. cit.*, p. 4.

[23] See United States Bureau of Labor Statistics, *Construction Review*, Vol. 3, No. 4, pp. 21 and 25, April 1957.

ing areas of the United States. Moreover, capital expenditures in the West for new industrial plants and public utility buildings skyrocketed 107 percent in 1956, compared with a rise of only 21 percent in areas outside the West.[24] Construction expenditures filter through the economy in such a volume and at such a rate that, as a period of expansion ends and expenditures slow down, they have an adverse impact on all economic activities which they formerly helped to support. In areas of the West where construction expenditures constitute a disproportionate part of the local economy, their decline can be expected to be a real jolt to the housing market.

(3) *Dependence of Economy on Military Support.* As important as is the military to the economic development of the West, here again including Alaska and Hawaii, it must be recognized that the West probably has more "one-industry" towns dependent on the military than any other part of the country.[25] In the Honolulu metropolitan area 2 out of 5 persons are directly dependent on defense activities for a living and, in western and north central Alaska, for every 5 persons employed in the area 3 are supported by the military. The Federal Reserve Bank of San Francisco reports that 50 percent of the total rise in manufacturing employment in the West in 1956 occurred in aircraft parts and in ordnance.[26] Communities in the West have learned from first-hand, and often bitter, experience how volatile an industry or military establishment can be whose well-being and direction depend on appropriations and decisions from the Pentagon in Washington. The problem of replacing the income which the military has generated, or retaining the population which the military has formerly supported, becomes a serious community problem indeed when the military reduces its activities or its procurement, or leaves an area altogether. Even though the military may be expected to remain as a substantial and important part of the West's economy, it is not a reliable basis for measuring the future growth of local housing markets.

(4) *Dependence of Home-Building on Eastern Capital.* The dependence of western lenders and home-builders on eastern capital for their "take-out financing" and a secondary market for the sale of home mortgages is a recognized necessity—but the fact remains that importing and renting money on this basis is not only costly to the West, but at times it has been a severe handicap to the planning and development of western markets, as witness the squeeze in 1956 on mortgage credit. The recent "tight money policy," while temporarily raising the general structure of interest rates throughout the country, has affected western markets adversely to a degree exceeding that of any other region of the country. While new home "starts" in the housing markets of the West *declined* 19 percent in 1956—compared with a decline of 15 percent in all other regions of the Nation—population in the West in 1956 continued to *increase* at an annual rate of 4 percent as compared with an estimated increase of only 2 percent in all remaining areas of the country.[27] It

[24] *Ibid.*, p. 21.

[25] For a recent study of the economic impact of the military on but one of the eleven western states, see Sterling Brubaker, *Significance of Military Installations on California's Economic Growth, 1930-1952,* (Bank of America, N.T.S. & A.), May 1955.

[26] Twelfth District, Federal Reserve Bank of San Francisco, *Monthly Review,* December 1956.

[27] See United States Bureau of Labor Statistics, *Construction Review,* Vol. 3, No. 4, April 1957 and No. 5, May 1957; and United States Bureau of the Census, *Current Population Reports,* Series P-25, No. 168, December 1957. Following are the percentage *declines* in dwelling units authorized by building permits, 1955-56, in each of the 11 western states: Nevada 43%, Washington 28%, Colorado 26%, New Mexico 25%, Montana 17%, California 17%, Idaho 16%,

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is apparent that the home-building industry in the West today has a production capacity far in excess of current demands. Demand potentials in the West are not being realized, however, for two important reasons: (1) because mortgage credit—the essential lubricant of the industry—is not yet freely available at sufficiently liberal terms to be attractive,[28] and (2) because home-builders are tending, inadvertently, to price themselves out of the market in an effort to produce more and more amenities under land and construction cost conditions which are currently rising faster than family incomes. Surveys of price trends in home-building tracts in Sacramento, one of the fastest growing metropolitan areas in the West, show a rise of 64 percent in the median price of speculatively-built homes in a 7-year period since 1950, with 46 percent of the net rise in this period occurring since 1955.[29] Moreover, vacancy surveys in selected metropolitan areas of the West show that, as a result of continuing high rates of population growth and declining rates of homebuilding in 1956-1957, vacancy trends, for the first time in six years, have turned sharply downward. For example, a recent survey of the Sacramento housing market shows that, after a sustained rise in available vacancy rates over a 6-year period since the 1950 Housing Census, the vacancy trend in 1956 turned abruptly downward to the lowest rate since 1952.[30] If the availabliity and terms of lending mortgage money continue to be tight and home building rates continue to decline, and capital outlays for new industrial plants continue to expand, many western communities may once again be faced with critical shortages of housing in the midst of what classical economists call a "capital goods' boom."

(5) *Greater Dangers of Inflation.*[31] Overriding all other concerns for the Nation's economy over the long-term is the danger of "creeping inflation," which the President of the United States has publicly identified as the Nation's No. 1 domestic problem.[32] As a New York trust company has put it, a monetary depreciation of only 2 percent to 3 percent per year (such as is currently being experienced)

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Wyoming 15%, Utah 15%, Oregon 14% and Arizona 11%. By comparison with other regions, home-building "starts" in 1956 declined 16% in the Northeast, 15% in the North Central region, and 14% in the South. Largest *declines* in metropolitan areas of the West were San Francisco-Oakland 32%, Denver 30%, and Seattle 29%. San Diego was the only metropolitan area in the West in which the rate of residential building *exceeded* that of 1955 (16%). Residential building in the Los Angeles Metropolitan Area, which continues to retain its No. 1 position among leading home-building areas of the United States, was down only 14% from the high level (103,700) units of a year ago.

[28] Subsequent to writing of this article, national legislation of August 1957 and the Emergency Act of 1958 tended to both increase and liberalize mortgage credit in the United States, including provisions for lower Federal Housing Administration down payments and for increased Federal Housing Administration maximum mortgage amounts. Interest rates on conventional loans have, likewise, reversed their previous upward trend.

[29] Unpublished, January 1958, Federal Housing Administration Office of Zone VI Market Analyst (San Francisco). The survey cited is for illustrative purposes only and, while generally confirmed by surveys of other western areas, the survey is not regarded by the author as conclusive evidence of price rises throughout the West. A built-in cost-rise feature contributing to the price spiral of California homes is the 5-year 5% annual wage increase guaranteed construction workers by union contract. In addition to larger homes and increased amenities, higher land and land development costs and utility costs are important factors contributing to the continuing price rise in California homes.

[30] Unpublished, November 1956, Federal Housing Administration Office of Zone VI Market Analyst (San Francisco). A subsequent survey of the Sacramento area made in April 1958 shows that vacancy rates for all major types of residential property have continued to decline since November 1956.

[31] For a statement on national inflationary dangers and the need for public restraint, see First National City Bank of New York, *Monthly Letter*, January 1957.

[32] Dr. Arthur F. Burns, former Chairman of the President's Council of Economic Advisors, makes the following pertinent comment on inflation and the current (1957-58) economic recession: "As long as the Government is prepared to take more decisive steps to combat recession than to resist inflation, our economy is likely to be biased in an inflationary direction. However, the proper remedy for this bias is *not* to diminish our efforts to curb recession, but rather to deal vigorously with inflation in times of economic exuberance. *Much good will come from recognizing our mistaken tolerance of inflation in the past. But it will come only by taking resolute steps for dealing with inflation in the future, not by our willingness to curb recession today . . . .*" Quoted by Sylvia Porter, *The San Francisco Chronicle*, April 10, 1958, p. 15.

does not seem much but, continued over the average life of an individual's working career, it could wipe out the greater part of the purchasing power of a life's savings.[33] In the last 17 years of America's greatest economic growth, the United States dollar has declined to less than half its 1940 buying power.[34] While inflation is by no means a problem peculiar to any one segment of the national economy or to the West alone, the dangers of inflation in the urban real estate markets of the West are believed to be inherently greater under conditions where the pressures of growth and demand on the supply of housing and land continue to be so strong and persistent. For example, homes built and sold in Los Angeles County in 1940 are selling today—despite 16 years of physical depreciation and obsolescence—for three times their original selling price.[35] Moreover, prices of existing homes in Los Angeles have been in a steadily rising trend for the last 2½ years, with an average rise of 5 percent during the year 1956.[36] The same family migration pressures which were at work creating the 1955 "building boom" in the metropolitan areas of the West are today constantly pressing against the existing supply of housing and land—with the result that prices and rents are continuing their rapid rise. The seeds of a still further inflation in residential and industrial land prices and in the housing market as a whole are evident in the contradictory conditions which currently prevail in the West, i.e., a continuing high rate of in-migration and further industrial expansion, together with a restricted supply of mortgage credit, rising prices of real estate and a decline in the rate of home-building.

(6) *Greater Possibilities of Over-Building.* Historical evidence shows that, up to now, home-building has traditionally been a "boom and bust" industry. While tight money conditions in 1956 knocked the props out from under the previous year's residential building boom in the West—as it did in other parts of the Nation—the possibilities of over-building in the West during prosperous periods of easy credit are implicit in the weaknesses which characterize the economic support of western housing markets. The danger of over-building stems principally from the dynamic growth of metropolitan communities in the West and the necessity of building speculatively in large volume in advance of developing markets. In the case of all real estate booms, experience has taught the market analyst and the land economist that the key factor to examine, and to watch on a continuing basis, is the sustaining force of the industrial expansion which supports the boom. An undetected turning point in the economy or a slowing down of the rate at which new jobs are being created may result in a rapid rise of the unsold inventory of new homes and an over-all vacancy rate of unmanageable proportions. During prosperous periods of easy credit when residential building rates are high—and this has characterized most of the postwar period—western housing markets have typically experienced higher vacancy rates, greater turnover in rental property and larger unsold inventories than urban areas of the East where rates of growth are characteristically more stable. For example, in response to an acceleration of industrial expansion in 1956, contractors in Orange County—currently the most dynamic growth area in Southern California—

[33] Guaranty Trust Company of New York, *The Guaranty Survey*, Vol. 36, No. 9, January 1957.

[34] For a recent comprehensive statement on price trends and underlying market forces, see H. E. Riley, "Recent Trends and the Outlook in the Price Situation," *Monthly Labor Review*, Reprint No. 2216, January 1957.

[35] Security-First National Bank of Los Angeles, *Monthly Summary*, December 1956.

[36] *Ibid.*

stepped up rates of home-building in 1956 to levels where three successive surveys over the last three quarters of the year showed an average 26 percent overhang of new unsold tract houses. In the same period, unsold inventory rates of 20 to 30 percent of completions were typical in speculative building tracts of such rapid growth areas of the West as Los Angeles, San Bernardino and Riverside.[37] While the recent upward trend of rental vacancies in the West is believed to have been temporarily halted by the restrictions of mortgage credit and declines in home-building, Census reports show for the four quarters of 1956 an average "rental vacancy rate" of 8 percent in the West compared with a rate of only 3 percent in the Northeast.[38] High vacancy rates characteristic of western housing markets are symptomatic of the West's rapidly expanding economy.

Future of Western Housing Markets

This analysis might well have been identified with the strength and weakness of western markets in general for the housing market, as such, cannot be analyzed independently from the economic base which supports the market for *all* goods and services. It is primarily the growth and potential of the economic base of the metropolitan areas of the West which determines the basic strength and weakness of western housing markets.

In the 13 years since the end of World War II, the West has experienced one of the most spectacular periods of economic expansion in its history. High rates of economic growth in the West, including the development of Alaska—America's 49th State and last frontier—may be ascribed to a number of factors, some of the more basic of which are: (1) the dynamism of the West itself, with its abundant natural resources including strategic metals, chemicals and oil, and with an industrial potential which was quick to respond to the increased availability of capital (at historically low rates of interest), (2) the Korean War and the "cold war," which gave impetus to the West's defense production facilities and which spurred the expansion and development of military installations and atomic research and testing activities, (3) the "nuclear-missile-space age" which has hastened the establishment of private and government facilities for the exploration of space and the development of scientific research and engineering centers in the West, (4) the vast recreational resources and tourist potential of the West which is only now in the infancy of its development, and (5) the high ratio of the West's migrant population which results not only from expanding job opportunities but a growing dissatisfaction with urban life in and around the highly congested cities of the East.

Up to World War II the growth of the West was confined largely to "materials-oriented" industries. Today, the industrial economy of the West, while still dependent to a high degree on its mineral timber and other raw material resources, is experiencing its greatest rate of growth in the so-called "foot-loose" manufactures and service industries, including a complex of defense-connected activities stimulated by the United States Department of Defense. With increasing numbers of eastern industrial plants branching to the West, the economy of the West is be-

[37] Unpublished surveys, January 1957, Los Angeles Residential Research Committee and Federal Housing Administration (Los Angeles).

[38] United States Bureau of the Census, *Housing and Construction Reports*, Series H-111, Nos. 8-11, July 1957-March 1958. "Rental vacancy rates" in the West, according to sample surveys of the United States Census, reached their highest level (9.3%) in the first quarter of 1956 after which they declined in each successive survey through the end of the year. Unpublished surveys by Federal Housing Administration in selected metropolitan areas of Northern California show a continuing decline in apartment vacancy rates up to April 1958.

coming more self-sufficient as it produces more for its own needs. While no region of the country can be so independent as to escape the shock of a national cyclical depression, there are an increasing number of economists who believe that the future problems of economic adjustment will tend to be regionalized and localized, and less national in scope. Broadly speaking, declines in the rate of manufacturing growth of some regions, such as New England, and the industrial expansion of others, such as the Far West, may be expected to continue. While the West is confronted with a potential scarcity of usable water, and this already is a pressing problem in Southern California, scientists report that the economic feasibility of converting sea water to fresh water may be near at hand. With the advancement of atomic science there also is reason to believe that nuclear energy will soon be available at commercial rates tn supplement the West's already abundant resources of existing and potential hydro-electric power. Hence, it is the conclusion of this analysis that the Far West, with the Nation's lowest population density and greatest potential for economic expansion, is destined for a further and unprecedented upward surge of population and housing demand in the 1960's and 1970's. Perhaps the destiny of the West in American history, as visualized 65 years ago by that great frontier historian, Frederick Jackson Turner, is only now being fulfilled as the West becomes of age.[39] The spirit, vigor and promise of the West still manifests itself in what Turner described as "a vision of hope and assurance that the world holds a place" where there is "opportunity to grow to the full measure of a man's own capacity."[40]

The West's economic problems of the future will not be the lack of growth, but the need for reconciling industrial expansion with economic stability, thus avoiding an imbalance in the West's economic base. When one considers the acceleration of technological advances now taking place in industrial processes and production techniques, and the high rates of obsolescence in military aircraft and other defense weapons on which so much of the current growth of the West depends, it is manifestly clear that each metropolitan area in the West, out of sheer self-interest, must analyze and measure for itself the strength and weakness of its own economic base. The future goal of the urban areas of the West should be the attainment of a sustainable and balanced economic growth, and not, as so often in the past, the goal of growth as an end in itself.

The giant home-building home-financing industry of the West, which is the primary subject of this analysis, can look forward to an increasing share in the national upsurge expected of family formation and economic expansion in the 1960's and 1970's. A challenge, however, to the leadership of this complex and highly-speculative industry is to develop and expand the metropolitan building markets of the West to levels of production consistent with sustainable levels of basic economic growth, and consistent with levels of building that will maintain healthy competition in the market place. In rapidly expanding housing markets susceptible to speculation and stimulated by upsurges of

[39] F. J. Turner, "The Significance of the Frontier in American History," a paper read before the American Historical Association, Chicago, 1893, and reprinted in *The Turner Thesis Concerning the Role of the Frontier in American History* (Boston: D. C. Heath and Company, 1949).

[40] *Ibid.*, "Contributions of the West to American Democracy," p. 33.

migrant growth such as has characterized most metropolitan areas of the West, the lines of demarcation between over-building and under-supplying a local housing market are often narrow and thin. To steer the future housing and land use programs of the West through the precarious channel of inflation and deflation —between a sellers' market and a buyers' market—will require continuing and perceptive market analysis, wise management and the exercise of self-restraint on the part of builders, land developers, mortgagees and government agencies identified with the development of urban housing in the West.

The next two decades of vigorous growth in the West, in addition to stimulating probable excesses of speculative building in some areas, will also bring to the fore new problems of urbanization on a scale as yet unknown to the metropolitan areas of the West. To anticipate and to prepare to meet the future problems of metropolitan growth and urbanization will require long-range foresight, bold planning and political courage on the part of all local civic leaders and public officials who have an interest in and responsibility for the sound development and redevelopment of the urban areas of the West.

An Analysis of Agricultural Ladder Research†

By CARL F. WEHRWEIN*

THE concept of the agricultural ladder did not originate in the United States. As Shu-Ching-Lee (National Tsing Hua University, Peiping, China) has pointed out,[1] the term appeared in writings on agricultural problems in England in the latter part of the 19th century. For example, Joseph Chamberlain used the term in 1885 in writings in which he advocated small agriculturas holdings. The agricultural ladder hal no doubt been talked and written about in all foreign countries that have dynamic farmland tenure systems. An article in an English farm paper about a 2,000-year-old sheep farm located between Wharfedale and Airedale on the Yorkshire moors[2] points out how the operators of this farm climbed the "farming ladder." In describing the rehabilitation of the farm by the present tenant the story states: "Once again Middle House has provided a rung in the farming ladder, for Mr. Towler, once a farm servant in the district, has now been able to take a second farm." An article entitled "Climbing the Ladder," in the same farm paper,[3] describes an international agricultural ladder consisting of dairy farming experience of any type in England, 4 or 5 years' experience as a "herd recorder" (tester in a dairy herd improvement association) in New Zealand, a varying length of time spent in "share-milking" (share renting a dairy farm) also in New Zealand, and finally ownership of a dairy farm there.

The earliest published American reference to the agricultural ladder concept that the present author could find was by Ely in an address read on December 28, 1916 at the annual meeting of the American Economic Association held in Columbus Ohio.[4] In a discussion of "The Relation of Land to the Human Element" as a field for research, Ely said, "We need what is called the agricultural ladder," and he pointed out the role of tenancy as a step on the agricultural ladder. In a lecture on "Means of Acquiring Land Ownership" given at a farmers' short course held at the Texas Agricultural and Mechanical College from July 30 to August 4, 1917, H. C. Taylor referred to an agricultural ladder consisting of six stages, namely; "boy apprentice," hired man, tenant farmer, mortgaged owner, owner free of debt, and retired farmer who is a landlord, as the road to farm ownership.[5]

At the annual meeting of the Society for the Promotion of Agricultural Science held in Washington, D. C., November 12 and 13, 1917, Spillman read a paper which, although the term "agricultural ladder" is not used in it, includes a table listing four ladders used by 417 Illinois

† The study on which this report is based was done while the author was on the staff of the Farm Economics Research Division, Agricultural Research Service, United States Department of Agriculture, Washington, D. C. He has since transferred to the Foreign Agricultural Service of United States Department of Agriculture. The opinions and interpretations expressed are those of the author and do not necessarily represent the views of the Farm Economics Research Division, Agricultural Research Service or the United States Department of Agriculture.

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[1] "The Theory of the Agricultural Ladder," *Agricultural History*, January 1947, pp. 53-61.

[2] Arthur Rastrick and Travers Legge, "Since Shepherding Began," *The Farmers Weekly* (London), June 29, 1956, pp. 18 and 19.

[3] Ruth Stern, *The Farmers Weekly* (London), August 17, 1956, pp. 73 and 75.

[4] R. T. Ely, "Landed Property as an Economic Concept and as a Field of Research," *American Economic Review*, Supplement, March 1917, pp. 18-35.

[5] *Means of Acquiring Land Ownership*, in Proceedings of the Texas Farmers' Congress and Farmers' Short Course 1917, Agricultural and Mechanical College of Texas Bulletin, Third Series, Vol. 3, No. 23, December 1, 1917, pp. 260-264.

farm owners.[6] The ladders were: (1) work on father's farm, work as hired man, tenancy, ownership; (2) work on father's farm, tenancy, ownership; (3) work on father's farm, work as hired man, ownership; (4) work on father's farm, ownership. A paper read by Spillman on December 27 of the same year, at the annual meeting of the American Economic Association held at Philadelphia,[7] includes a table which lists the same four ladders plus four more used by 45 other Illinois farm owners. The four additional ladders are exactly the same as the other four except that in each the first step is "from other occupations" instead of work on father's farm. In both of these papers the steps on the ladders are represented by symbols similar to those used in later studies.

After Ely and Spillman had described the agricultural ladder concept at the annual meeting of the American Economic Association at Richmond, Virginia on December 28, 1918[8] the concept was firmly established in this country. Spillman's paper is the one in which he reported the data he and his associates in the Office of Farm Management of the United States Department of Agriculture had gathered in interviewing 2,112 farm owners in Illinois, Iowa, Kansas, Nebraska, and Minnesota. In collecting data Spillman and his associates confined themselves to those pertaining to the following four steps: working on the home farm with or without wages (F), working as a hired man on other farms (H), tenancy (T) and ownership (O), and to the F-H-T-O, the F-H-O, the F-T-O and the F-O ladders. In the paper read by Ely the authors recognized only the H, T, and O stages.

The agricultural ladder literature extant defies precise and satisfactory classification. For our purposes, we need only to divide the 42 publications, which we have examined and to which we refer hereinafter, into statistical and nonstatistical groups and to divide the former into those that cover large areas and those that deal with relatively small areas.

In regard to both scope and quality the most outstanding among the statistical publications is that of Timmons and Barlowe on the agricultural ladders used by farm owners in the 13 midwestern states of Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin.[9] In a nationwide survey of farmland ownership undertaken in 1946 by the former Bureau of Agricultural Economics of the United States Department of Agriculture in cooperation with the North Central Regional Land Tenure Committee, questionnaires were sent to 48,158 farm owners living in these states. The farmers were selected at random from the names of owners as listed in the 1945 Bureau of the Census records. The questionnaire included questions about the agricultural ladder experiences of the farm owners, and related information. The statistics and other information on the agricultural ladder and the textual discussion thereof form part of an overall story of the farmland ownership situation that prevailed in those states in 1946.

The key agricultural ladder table is Table 32, on which the ladders used by 9,509 men owners are delineated and the

[6] W. J. Spillman, *How Farmers Acquire Their Farms*, in Proceedings of the Thirty-Eighth Annual Meeting of the Society for the Promotion of Agricultural Science, Washington, D. C., November 12 and 13, 1917, pp. 87-90.

[7] W. J. Spillman, "Work of the Office of Farm Management Relating to Land Classification and Land Tenure," *American Economic Review*, Supplement, March 1918, pp. 65-71.

[8] W. J. Spillman, "The Agricultural Ladder" *and* Richard T. Ely and Charles J. Galpin, "Tenancy in an Ideal System of Land Tenure," *American Economic Review*, Supplement, March 1919, pp. 170-179 and 180-212.

[9] John F. Timmons and Raleigh Barlowe, *Farm Ownership in the Midwest*, Iowa Agricultural Experiment Station Research Bulletin No. 361, June 1949, pp. 845-959.

percentage of the owners using each ladder is indicated with considerable detail and precision. In Table 33 the information shown in Table 32 is broken down by states. In Table 34 it is broken down by types of owners (owner-operators, part owner-operators, operator landlords, and nonoperating landlords) and in Table 35 it is broken down by occupation of the owners (farmers, retired farmers, business men, professional workers, and hired workers). Other tables show for the owners using each ladder, percentage distribution by occupation, age at which land ownership was first acquired, and method of farm ownership acquisition (purchase, gift or inheritance, etc., and combinations of methods), and the percentage reporting receipt and use of inheritance other than land. These tables, as well as others and additional information are discussed in detail in the text.

The publication, however, is not without some deficiencies. It has too little background information describing the physical, climatological, technical, economic, and human characteristics of the 13-state area. Consequently, the cause and effect relationship between these characteristics and the ladders found is not fully explained. As the questionnaire was sent only to farm owners the publication contains no information about the ladders used by the tenants. In 1945, 28.9 percent of the farmers of these 13 states were tenants. The ladders delineated do not show the mortgaged-owner and the full-owner rungs separately. By 1946 the mortgaged-owner status had been recognized for many years as a distinct and separate rung on the agricultural ladder. The rungs of the ladders are not arranged in the exact chronological order in which they were used and too little information is given as to the amount of time spent on each rung. No information appears on slippages down the ladders. Many farmers in these 13 states slipped down their ladders during the depression and no doubt many of them were still farming in 1946. Also, the authors offer practically no direct recommendations as to what could be done to improve or shorten the ladders found and to improve the individual rungs.

On page 893 of their publication, Timmons and Barlowe quote the following from an article by Gray, Stewart, Turner, Sanders, and Spillman in the 1923 Yearbook of the United States Department of Agriculture:[10]

> "In the first place, the various successive stages may not always represent progress. It is probable that the various stages do represent some progress in independence of control, although not always, for an owner under heavy mortgage may be less independent than a tenant who is out of debt. Moreover, progress in independence does not always mean progress in well being. Many a tenant who is subject to the supervision of a capable and honest landlord may be better off than a farm owner who has not sufficient experience or capital to operate his farm efficiently. Those who employ the ladder analogy frequently have in mind that each succeeding step indicates higher financial standing, or net worth. It is obvious, however, that a mortgaged owner farmer may have a smaller equity in the farm capital than a tenant or part-owner free of mortgage. Moreover, a tenant in some parts of the United States possesses more property on the average than an owner in other parts."

On these grounds Timmons and Barlowe conclude that the agricultural ladder concept "is highly artificial and cannot be accepted without numerous reservations."[11]

This is a misleading argument. Whether or not a farmer's circumstances improve when he becomes an owner

[10] L. C. Gray, C. L. Stewart, H. A. Turner, J. T. Sanders and W. J. Spillman, "Farm Ownership and Tenancy," in *Agricultural Yearbook 1923* (Washington, D. C.: United States Department of Agriculture), p. 548.

[11] *Op. cit.*, supra, No. 14, p. 892.

cannot be determined by comparing his circumstances as an owner with those of other farmers, be they tenants or owners, especially farmers in some other part of the country. It can be determined only by comparing his circumstances as an owner with the circumstances he himself was under before he became an owner. It is well known that thousands of tenants in the Corn Belt, for example, are generally better off than thousands of owners in poorer agricultural areas but this difference has nothing to do with tenure. It comes from differences between the Corn Belt and the other areas in soils, topography, climate, percentage of land under cultivation, types of farming, sizes of farms, available markets, and similar background conditions.

Spillman's pioneer study is another large-scale statistical agricultural ladder research project.[12] In undertaking, completing, and publishing the results of this project, Spillman performed a notable service in that he aroused interest in the agricultural ladder concept, an interest that has continued to the present and no doubt will continue indefinitely in the future. Because of limitations in his data, however, in some other respects the publication is of little value. In collecting data as to the steps used by these 2,112 farmers, Spillman confined himself to the four steps of working on the home farm (with or without wages) (F), working as a hired man on other farms (H), tenancy (T), and ownership (O). With these steps Spillman could delineate only the F-H-T-O, the F-H-O, the F-T-O, and the F-O ladders, which for many of the 2,112 farmers is incorrect.

As stated previously, all of the 2,112 farmers studied were owners; whereas in 1920, 38.6 percent of the farmers of these states were tenants. The publication does include such data as the percentage of the owners (exclusive of Minnesota owners) using each ladder who obtained their farms by each of a number of methods and, for the owners in the five states using each ladder, data as to the average age of leaving the home farm, average number of years as a hired hand, as a tenant, and as an owner. The net result is that as a picture of the agricultural ladder situation existing in these states in 1918, the publication is incomplete. Although these are legitimate criticisms of Spillman's data, it must be admitted that in his pioneer project he could not be expected to be aware of all criteria for agricultural ladder research work that can be recognized today.

An unusual methodology was used by Taylor, Ducoff, and Hagood in their nationwide statistical study.[13] Their data deal with the male farm-workers 20 years of age or over gainfully employed on farms in the United States in the decennial census years of 1880 to 1940, inclusive. The key table is Table 11, which is reproduced in part below.

In this table, as the authors explain it:
". . . . the group of farm operators under 25 years of age in a given decennial year is identified as the cohort of that year. Then separately for owners and tenants the numbers in the cohort are traced over successive decades. For example, in the columns for the "cohort" of 1890, the entries for 'under 25 years' are taken from the 1890 Census, the entries for '25 to 34 years' from the 1900 Census, and so on to the last age group, '65 and over,' which comes from the 1940 Census."[14]

This methodology does not produce a clear picture of the agricultural ladder situation existing in an area. In the Taylor, Ducoff, and Hagood publication, with the data confined to the three

[12] *Op. cit.*, supra, No. 8.

[13] Carl C. Taylor, Louis J. Ducoff and Margaret Jarman Hagood, *Trends in the Tenure Status of Farm Workers in the United States Since 1880*, Bulletin of Bureau of Agricultural Economics, United States Department of Agriculture, July 1948.

[14] *Ibid.*, p. 17.

COHORTS OF FARM OPERATORS BY TENURE FOR SUCCESSIVE DECADES, UNITED STATES; 1880-1940[1]

Age Groups	Cohort of 1910		Cohort of 1900		Cohort of 1890	
	Owners	Tenants	Owners	Tenants	Owners	Tenants
	1,000	*1,000*	*1,000*	*1,000*	*1,000*	*1,000*
Under 25 years.....	98	317	76	199	71	147
25–34.....	561	754	621	777	541	653
35–44.....	766	672	938	631	970	585
45–54.....	951	469	943	505	1,021	447
55–64.....	...	...	860	282	794	263
65 and over.....	...	...	...	...	693	133

[1] "Cohorts" of 1880 and 1920 omitted.

general stages of farm laborer, tenant, and owner[15] and with no delineation of ladders, there is no clear evidence that even one farmer used a ladder composed of only these steps and, consequently, there is no information as to the number of farmers who used each such ladder. But as it is known that all over the country farmers used not only these but also a variety of other steps, it is obvious that many, if not most of the farmers accounted for in the study, used ladders that included other steps.

In addition, there is in this publication very little positive evidence of progress by farmers in climbing agricultural ladders. The authors themselves point this out. Referring to Table II, they state:

"Support for the ladder theory would be indicated if for a given cohort of farm operators the prevailing pattern were for increases in the number of owners in the cohort to occur simultaneously with decreases in the number of tenants, as persons of a specified age shifted from tenant to owner status during a given 10-year period. But the data in the table show that this does not prevail generally. For every cohort, the increases in owners as the group changes from under 25 years of age (identified as average age 20) to ages 25 to 35 years (identified as average age 30) is accompanied by an increase in tenants as well. Some of the owners without question did come from the tenant group 10 years earlier, but accessions to the tenant group were large enough to make up for these shifts and to supply a net increase in tenants as well. . . . . In the change from average age 30 to average 40, there was a net increase in owners in the several cohorts and a net decrease in the tenants, suggesting some documentation of climbing the ladder. But in no cohort was the decrease in tenants large enough to provide for the large increase in owners, so that sources other than tenants must have accounted for more than half of the increase, unless the tenants who 'climbed the ladder' were quickly replaced by newcomers to the tenant group."[16]

However, even if for a "cohort" all the figures in the "Owners" column were exactly the same and all the figures in the "Tenants" column were exactly the same for all the age groups, it would not be evidence of lack of climbing. Because of mortality, retirement, and changes in occupational status by some owners and tenants, other farmers would climb up to replace them.

[15] Table 11 has data only for tenants and owners but 13 other tables list not only the numbers of tenants and owners but also the numbers of hired workers and /or changes therein per 1,000 males 20 years old and over gainfully employed on farms in the United States, in various geographic regions and in individual states in the decennial census years of 1880 to 1940, inclusive. One wonders how the authors classified the farmers who were found to be in the combination tenure stages, laborer-tenant, laborer-owner, and tenant-owner, if these farmers were included.

[16] *Op. cit.*, supra, No. 19, p. 17.

These deficiencies are due to the lack of continuity in the data for the individual farmers from one census year to the next. Farmer A in the "Under 25 years" group of owners in the "cohort" of 1890 is not identified in either the group of owners or the group of tenants indicated under "Cohort of 1890" as having been 25 to 34 years of age in 1900, and so on. But the publication is by far the best one available as concerns information about the natural, technical, economic, and human conditions and changes therein throughout the country, and in regard to the cause and effect relationship of these conditions to the steps reported as used and to the varying numbers and proportions of the farmers using each.[17]

There are large gaps in the agricultural ladder data collected by Goldenweiser and Truesdell in their nationwide study of United States farm tenancy in 1920.[18] In taking the 1920 census each owner was asked only how many years, if any, he worked on farms for wages, how many years he was or had been a tenant, and how many years he had farmed as an owner. The owners were not asked whether they had engaged in any other gainful occupation or occupations prior to ownership and how many years they were in each. Consequently, only data pertaining to the H, T and O stages were obtained, and the conclusion that 20.5 percent of the 3,529,743 owners who answered the questionnaire used the F-H-T-O, 23.7 percent used the F-T-O, 14.2 percent used the F-H-O, and 41.6 per cent used the F-O ladder is incorrect. The authors admit that the relatively high percentage of 41.6 percent for the F-O ladder is evidence that many of the 1,486,557 owners to whom this ladder is attributed failed to report previous experience they had had as farm laborers and/or tenants.[19] It is an indication also that some of these owners had some gainful pre-ownership experience other than farm laborer and tenant, which the questionnaire did not ask them to report. As the average total farm experience of the owners indicated for each of these ladders was determined on the basis of only the total years of experience on the steps of the ladder as reported by the owners, these averages also are incorrect.

This publication has a few other deficiencies but it contains some interesting sets of data. These include figures on the average age of entering tenancy and of becoming an owner, and the average amount of time spent in each of these stages. It includes also some evidence of climbing up the agricultural ladder in terms of the modal ages of the groups of farmers in the share and share-cash tenant, the "cash and unspecified tenant," the part owner, the "full owners, mortgaged" and the "full owners, free" stages.

Among the small-scale statistical agricultural ladder research publications a considerable number are of relatively high quality. Limitations of space do not permit a detailed discussion of these publications and I can do little more than mention a few. Among these is the study by Hendrix, Elrod, and Fullilove of 235 farmers (106 farm owners, 79 tenants, and 50 croppers) living in Newton County, Georgia, in 1937.[20] This publication is unusual in that it designates very exactly the many ladders found to have been used. Some of these ladders were complicated and included extensive slip-

[17] Another project in which this general methodology was used is that of John D. Black and R. H. Allen, "The Growth of Farm Tenancy in the United States," *The Quarterly Journal of Economics*, May 1937, pp. 393-425. Among the differences between the two projects is that Black and Allen obtained data on seven agricultural ladder steps. Their publication also is excellent in regard to background information.

[18] E. A. Goldenweiser and L. E. Truesdell, *Farm Tenancy in the United States 1920*, Census Monograph IV, 1924, pp. 83-116.

[19] *Ibid.*, pp. 102, 105, 107.

[20] *Op. cit.*, supra, No. 12, pp. 18-24.

page. Another of these studies is that made by Ten Haken in 1927 of 139 farmers, 31 retired farmers (all of whom were owner-operators when they retired), 49 active owner-operators, and 59 tenants, of Walnut Grove Township, Knox County, Illinois.[21] A third study in this group is Rankin's 1920 survey of 1,034 farm operators located in eight small areas in as many Nebraska counties.[22] Of these farm operators, 543 were owners and 491 were tenants, but agricultural ladder data are given for the owners only. The differences between the eight areas are pointed out.

A fourth project is that of Tetreau on Madison and Union Counties, Ohio,[23] and the writer believes that his own three, on the townships of Newton and Bradford in Manitowoc and Rock Counties, Wisconsin, belong in this category also.[24] Tetreau obtained a wide variety of information on 305 farmers of Union County, of whom 200 were owners and 105 were tenants, and on 305 farmers in adjoining Madison County, of whom 140 were owners and 165 tenants. But agricultural ladder information is given for owners only. The 270 tenants are classified into four groups, (1) 48 owners-in-prospect, (2) 34 apparently permanent tenants, (3) 15 who were equipped financially to be owners but who preferred to remain in the tenant status, and (4) 173 whose future ownership status was in doubt. The present writer's three articles deal with 199 farm owners and 2 tenants of the Township of Newton and 45 owners and 47 tenants of the Township of Bradford.[25]

Much significant and interesting information was contained in some of the nonstatistical agricultural ladder publications studied. Adon Poli gave a good description of the pre-World War II agricultural ladders used by Japanese and Japanese-American farmers in the Pacific Coast states.

"The initial tenure status of the Japanese immigrant farmer was that of farm laborer. He usually worked under the direction of Japanese 'bosses,' individuals who more or less controlled the disposition of the working forces under their leadership. These Japanese 'bosses' organized labor groups and bargained with farmers in supplying laborers on a wage or contract basis . . . . As the Japanese farm laborers, however, gained proficiency in farming operations, they soon aspired to the more desirable status of farm operator. . . . Enterprising Japanese 'bosses,' with a ready supply of manpower at their disposal and an intimate knowledge of the operating problems in any given region were in a position to induce the farmers with whom they negotiated to lease holdings to them under different forms of tenure . . . . Another common practice which simplified financial problems of Japanese operators was the forming of partnerships among themselves. In this way, through hard work, industry, and shrewd bargaining many Japanese farmers proceeded upward along the 'agricultural ladder' from farm laborer to share cropper and tenant, and some to ultimate farm ownership."[26]

The publication contains no information as to whether the Japanese farmers used any steps or ladders other than those referred to above.

[21] William Ten Haken, "Land Tenure in Walnut Grove Township, Knox County, Illinois," *The Journal of Land & Public Utility Economics*, February 1928, pp. 13-24, and May 1928, pp. 189-198.

[22] J. O. Rankin, *Steps to Nebraska Farm Ownership*, Nebraska Agricultural Experiment Station Bulletin No. 210, February 1926.

[23] E. D. Tetreau, "The 'Agricultural Ladder' in the Careers of 610 Ohio Farmers," *The Journal of Land & Public Utility Economics*, August 1931, pp. 237-248.

[24] Carl F. Wehrwein, "The Pre-Ownership Steps on the 'Agricultural Ladder' in a Low Tenancy Region," "The Post-Ownership Steps on the 'Agricultural Ladder' in a Low Tenancy Region," and "The 'Agricultural Ladder' in a High Tenancy Region," *The Journal of Land & Public Utility Economics*, November 1928, pp. 417-425; February 1930, pp. 65-73; February 1931, pp. 67-77.

[25] Most of the other small-scale statistical agricultural ladder research publications I read are at a somewhat lower level of significance and usefulness than these eight. Space does not permit discussion of them.

[26] Adon Poli, *Japanese Farm Holdings on the Pacific Coast*, Mimeographed Circular of the Bureau of Agricultural Economics, United States Department of Agriculture, December 1944, p. 7.

Marshall Harris pointed out in detail the growing importance of the agricultural ladder that consists of father-son operating agreements and transfer arrangements involving the home farm. The first rung of this ladder is an operating agreement based on a 4-H or F.F.A. project undertaken by the son. The son has complete charge of the rearing of an animal or the use of a piece of land for a year and the income produced by the animal or the land is his. The next two rungs are operating agreements under which increasing shares of the equity in the machinery, livestock, and so on, of the management responsibility and functions, and of the income accrue to the son. A part of the son's share of the income is periodically credited against the value of the machinery and other equipment to increase his equity therein. The remaining two rungs are transfer arrangements. The first transfers to the son a specific ownership claim against, or interest in, the farm real estate. The second transfers to the son the father's remaining equity in the real estate.[27] Barlowe and Timmons also pointed out the increased use of this ladder.[28]

Although this ladder has become more important, in my opinion it is doubtful whether, as Harris states,[29] there will some time be as many as 1 farmer in 6 acquiring ownership by this procedure, or whether Barlowe and Timmons are justified in asking: "This trend is all very well for the favored sons who can inherit or share in the inheritance of a family farm. But what of the would-be-owners who enjoy no such advantages? Are they to be frozen out by a 'closed shop' policy of intra-family transfers."[30] Probably with few exceptions this ladder can be used only by sons of living farm owners who want to farm and want to do so on the home farm. Many living owners have no sons and many sons of living owners either do not want to farm or do not want to do so on the home farm. The home farm may be too small to support two families or the son may prefer a farm with better land or better buildings, or both, or he may prefer a different location or a different type of farming. In addition, a father and his son may not be able to make mutually satisfactory operating or transfer agreements or, if they make them, they may not be able to carry them out to completion. Hence, the number of farmers who acquire ownership by this procedure will always fall far short of creating a "closed shop" situation.[31]

Discussion of nonstatistical agricultural ladder publications which appear to this writer to be more or less unsound or misleading will be confined to that of Lawanda Fenlason Cox who questions the validity of the agricultural ladder concept.[32]

However, the key idea in the publication appears to be the theory that the agricultural ladder concept is sterile because, in the view of the author, it has not promoted historical research in farm tenancy. This idea is expressed specifically as follows:

[27] Marshall Harris, "A New Agricultural Ladder," *Land Economics*, August 1950, pp. 258-267.

[28] Raleigh Barlowe and John F. Timmons, "What Has Happened to the Agricultural Ladder," *Journal of Farm Economics*, February 1950, pp. 30-47.

[29] *Op. cit.*, supra, No. 36, p. 262.

[30] *Op. cit.*, supra, No. 37, p. 46 and 47.

[31] There are a number of other creditable nonstatistical agricultural ladder publications which supply interesting information or help to improve agricultural ladder research methodology. For example, Shu-Ching-Lee, (*op. cit.*, supra, No. 1), among other things, compares the agricultural ladder situation that characterizes static agricultural societies like those of China and India, with the ladder situations existing in dynamic agricultural societies like that of the United States; and George H. Von Tungeln, "Some Observations on the So-Called Agricultural Ladder," *Journal of Farm Economics*, January 1927, points out, among other weaknesses of certain published agricultural ladder data, the distortion caused by the higher mortality rate of the older farmers as compared with the younger.

[32] Lawanda Fenlason Cox, "Tenancy in the United States 1865-1900, a Consideration of the Validity of the Agricultural Ladder Hypothesis," *Agricultural History*, July 1944, pp. 97-105.

"No constructive purpose would be served by searching the records for those who made their way upward and those who did not. The important historical fact is not that certain individuals, even though a numerous group, could and did change their status from that of tenant to owner, but that the institution of tenancy itself was growing . . . In other words, the impetus for this discussion has been a conviction that the ladder concept is a sterile one. It has not promoted historical research. It has stifled curiosity concerning the conditions that surrounded tenancy . . . There is need for more knowledge of the historical facts of tenancy—its origin, the divergent patterns of its development (or disappearance) in various sections of the country and in differing areas within the sections, its interrelationship with land policies, speculation, farm prices, land values, credit facilties, sizes of farm, types of crop, conditions of inheritance, and the attitudes of immigrant folk toward the land. There is need to know more about the manner of life of farm tenants, particularly of those who remained renters in their forties and fifties. Such inquiries will be of the greatest possible value only if those who undertake them are on guard against an unconscious acceptance of the ladder theory and all that it implies."

No one will dispute the claim that continuing research in farm tenancy is necessary and presumably the author would agree that the results of such research will be significant and of value to practical farmers, among others. But the author submits no evidence that the agricultural ladder concept or the findings in agricultural ladder research have not led to research in farm tenancy. But even if we could be sure (which we cannot) that this concept or these findings have not promoted research in farm tenancy, would this be conclusive evidence that the concept is sterile? Is it true, as the author claims, that the change from tenancy to ownership by millions of farmers is of no importance to them and consequently, of no importance to many other groups and individuals?

Anyone familiar with and appreciative of the realities of agricultural land tenure knows that whether a farmer is a tenant or an owner and how long he has been or was in either status, do make a difference to him. It also makes a difference whether or not, before tenancy or ownership, he had to engage in any wage-earning jobs or trades or in other occupations and how much time he spent in each. It also makes a difference to farmers whether or not, as a result of agricultural ladder research, the ladder situation in an area is improved. Consequently, the agricultural ladder concept has demonstrated its significance in having promoted and stimulated extensive research in that undeniably important element of the agricultural economy of the country, the agricultural ladder itself, if not in any other phase of farm land tenure. Nor can I agree that either conscious or unconscious acceptance of the agricultural ladder concept necessarily hinders anyone in performing detailed, accurate, and objective farm tenancy research.

The Miracle of German Housing in The Postwar Period†

By ROBERT G. WERTHEIMER*

THE magnitude and speed of housing construction in West Germany since the war has been outstanding. Destruction of housing by war action, most severe in urban and industrial centers, amounted to one-quarter of the ten million dwelling units in existence in 1939.[1] The desperate housing shortage in 1945, second only in urgency to the procurement of food, was further increased by the need of shelter for ten million refugees. The analysis made in this article deals with housing needs, the rate of reconstruction, public assistance, methods of financing, and the share of housing construction in total investment and thus as a major factor in the maintenance of prosperity in Germany.

Housing Needs and Rebuilding

A total of 2.3 million dwelling units either were completely destroyed or rendered permanently uninhabitable during the war period of 1939 to 1945. An equal number suffered medium or lesser damages.[2] Housing was needed not only for the resident population and refugees but for the rapidly forming new families. By the end of 1950 the immediate and most urgent housing deficit, as shown in Table I, amounted to five million units.[3]

TABLE I—HOUSING NEEDS, WEST GERMANY: DECEMBER 31, 1950*

in million dwelling units

Destroyed, in need of replacement	2.3
Requirements of refugees	2.3
Deficit in housing (Net formation of new families from 1945 on)	1.2
Gross Needs	5.8
Less Additions, chiefly by repairs, since 1945	1.0
Net Needs[1]	4.8

* *Source:* Herman Wandersleb, *Four Years of Housing Activity* (Bonn, Germany: Federal Housing Ministry, 1953), pp. 46-47.

[1] Not including normal replacement needs neglected during the war. To catch up with these needs, annual additions of 130,000 units for fifteen years are required.

The so-called miracle of German recovery should indeed be applied to housing. Annual construction of dwelling units in the last decade not only greatly exceeded top construction years of the much larger old German Reich but also accounted for an increasing share in total investment in postwar Germany.[4] Completions of dwelling units, according to Table II, averaged 500,000 units annually and increased to over 100 units completed per 10,000 population from 1953 on. This rate of performance exceeded that of previous good years three times and out-distanced corresponding rates of every other country in the world.[5] In spite of

† The material on which this article is based was originally undertaken for a doctoral dissertation at Harvard University on *Tax Incentives for Savings and Investments in the German Federal Republic, 1948-1954*, completed in 1956. The legal aspects of incentives and statistical data are brought up-to-date.

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[1] In comparison, in Great Britain, one-eighth of the existing housing was destroyed. See, "Housing, Rents and Subsidies," *Labor and Industry in Britain*, March 1956, p. 30.

[2] Hermann Wandersleb, *Four Years of Housing Activity* (Bonn, Germany: Federal Housing Ministry, 1953), pp. 46-47.

[3] The Housing Census of 1950 registered two million persons as living without any housing (living in shelters, make-shift hovels, etc.) Only two-fifths of the 15.5 million households had the use of a dwelling unit for themselves while three-fifths had to double up with one or several families. Altogether, 12 million persons were listed as subtenants.

[4] Expenditures for new housing construction averaged one-half of total construction outlays and one-fifth of total gross investment spending from 1950 through 1957. In prewar years, housing amounted to less than one-seventh of investment spending.

[5] In the early years of reconstruction, new units comprised 75 percent of the total, the balance consisting of repairs, alterations and additions. New units amount to over 90 percent of the total as of 1958.

TABLE II—HOUSING COMPLETIONS, WEST GERMANY: 1949-57*

YEAR[1]	Dwelling Units Completed	Unit Completions Per 10,000 Inhabitants	Total Value in Billion DM[2]
1949.....	215,000	46	2.9
1950.....	360,000	76	3.8
1951.....	430,000	89	4.9
1952.....	452,000	92	6.3
1953.....	515,000	106	7.8
1954.....	555,000	109	9.0
1955.....	542,000	108	10.8
1956.....	561,000	111	11.3
1957.....	529,000	103	11.5

* *Sources:* W. Fey, "Der Wohnungsbau in der Bundesrepublik und seine Finanzierung, *Bundesbaublatt*, Number 4, 1954; and *Boersen-und Wirtschaftshandbuch* (Frankfurt, Germany: 1958), pp. 25-26; "Was Wird Aus Dem Wohnungsbau?" *Bayerische Vereinsbank* (Muenchen, Germany: Number 2, 1958).

[1] The year of fewest completions in the federal German Republic (West Germany) exceeded the best prewar construction years of the much larger German Republic. Completions amounted to 197,000 units in 1929 and 183,000 units in 1936, which was the best year of the thirties.

[2] The currency reform of June 1948 established a new currency known as Deutsche mark, formerly known as Reichsmark. The price level in Deutsche mark in 1948 ran approximately 80 percent above that of the German prewar level.

the completion of over 4 million dwelling units in the last decade the housing deficit, early in 1958, was estimated at 2.33 million units.[6]

Housing units erected since 1948 were typically 3-family, moderately priced rental units containing two or three rooms and a kitchen. Since 1955 the housing trend is toward four-room and larger apartments with far greater emphasis of single units privately owned.[7]

Contribution of the German Government to Housing

Assistance to housing construction by public authorities was not unique in postwar Germany. Much of the rental housing built in Germany during the twenties was publicly financed. Millions of industrial and white collar workers benefited from this low-cost housing which kept rents in newly built units down to one-tenth of the average gross earnings of these groups.[8]

The German government established a decade ago also launched a housing assistance plan but proceeded in an entirely different manner. Most important, a systematic housing program was enacted that made it the obligation of the federal government not only to plan for new housing construction each year but also to secure the means for its financing. While public authorities were assigned a major role in the procurement of housing funds, they discontinued the method formerly used of raising them by specific taxes. The present housing program thus cannot break down because of the drying up of specifically assigned tax revenues as happened in 1930 at the very time when more housing construction was urgently needed to combat the depression. A third and equally important change in the entire role of housing was brought about by the recognition that the government had to assist—in one way or another—in encouraging the flow of private funds into mortgages for the financing of new housing. In this way the great variations in the availability of private funds for new housing as experienced in the past were avoided and the building program stabilized. Furthermore, in the twenties lending rates on private funds were high; thus rents

[6] Between 1949 and 1957 sufficient units were provided to shelter more than 15 million persons. Nevertheless, the continuous influx of refugees and rising replacement needs (among other factors) remain responsible for the present shortage—not allowing for one million persons still living in old barracks and bunkers.

[7] Units completed average 4 rooms (including kitchen) covering a floor area of 660 square feet. See "1955 wieder 540,000 Wohnungen," *Der Arbeitgeber*, April 20, 1956.

[8] This type of low-cost rental housing was financed by a special tax on rental incomes (*Hauszinssteuer*) from existing housing. In this way RM 5 billion were collected from 1924 to 1931 and lent as second mortgages at interest rates from 1 to 3 percent. Another RM 3 billion were given by the government as direct subsidy. Total public assistance sufficed to finance one-half of all housing construction dur- this period. See W. Fey, *Leistungen und Aufgaben im Deutschen Wohnungs und Siedlungsbau* (Berlin, Germany: Duncker & Humblot, 1936).

rose and they, in turn, could be reduced only by still larger subsidies. When tax revenues dwindled in 1930 the government cut assistance to housing to a minimum causing the complete collapse of this important segment of the economy.

The First Housing Act of 1950 was designed to avoid all the pitfalls of the past and put public assistance to housing on an entirely new basis. It established the concept of "social housing" and laid out a program of construction of 300,000 dwelling units each year up to 1956. Later it was extended until the end of 1962.[9] This law not only provided for public mortgage lending and confirmed existing incentive taxation for the channeling of private funds into housing but also created various housing and resettlement projects for low income earners and refugees. It introduced three basic categories of housing; social housing, tax-stimulated and freely-financed housing without government aid in any form.

Social housing deals with the housing on a rental basis for low-income earners.[10] This type of construction is assisted by very low-cost public loans for second mortgages (at 0.5 percent) amounting to one-third to one-half of the total outlay. Dwelling units constructed with this assistance cannot exceed a floor area of 900 sq. feet and their rentals must be limited to amounts set by the housing authorities.[11] The latter also select the tenants from waiting lists according to their income brackets and urgency of need. This type of construction is exempt from the purchase tax on real estate transactions and the completed units remain free from real estate taxes for a decade.[12] By compliance with the requirements of social housing, all its benefits become available to any other kind of housing.

Tax-stimulated housing is financed exclusively by the use of private funds. The incentive to lend is in the fact that loans for mortgages can be deducted from taxable income. Such loans, however, must be free of interest or at 5 percent. Builders can draw on these funds provided they use them in the construction of units according to the requirements of social housing. In particular, the floor space of the units and rents that can be charged remain controlled.[13] The capital furnished by the builder himself can be charged the higher market rate of interest (at least 8 percent in the earlier years but 7 percent now) and he is permitted a fair profit in the pricing of the units.

Finally, freely-financed housing is built without public funds or tax-stimulated funds. This category naturally remains free of any limitation either on size or the amount of rent that can be charged or the selection of tenants. Faster write off and various local tax reductions were made available to encourage the free use

[9] The Housing Act of 1950 and its amendment of 1956 provided for comprehensive planning of housing setting national goals for the number of units to be erected annually, establishing their average size, also the cost of the rentals and interest rates to be paid for mortgages financing them. Construction costs, on the other hand, remained uncontrolled. See, Das Erste Wohnungsbaugesetz, April 24, 1950, BDBl, p. 83; and A. Hoffmann, *Die Steuern-Gebuehren-und sonstigen Abgabeverguenstigungen fuer den Wohnungsbau*, Vol. 38 (Koehn, Germany: R. Mueller, 1953).

[10] To qualify in this category, annual incomes are limited to DM 6,000 for a family of four with further credit of DM 1,200 for each additional child. See, Second Housing Law of 1956.

[11] The maximum monthly rental per square meter of rented floor space set at an average of DM 1.00 in 1950 was gradually increased to DM 1.27 by 1957. Controls are carried out by special supervising bodies set up in each of the nine German Laender and in West Berlin. See, *Boersen- und Wirtschaftshandbuch, 1958*, Frankfurt, Germany: 1958), pp. 25-26.

[12] The purchase tax and real estate tax are local taxes. The exemption from the latter, according to various estimates, cuts down the annual cost of upkeep, administration, and depreciation by one-sixth. The exemption from the purchase tax saves, on the average, 7 percent of the cost of the building lot.

[13] Area limitations here are set at 1,300 square feet and rentals can exceed those set for social housing by 50 percent. Furthermore, these units can be rented freely without allocation by the authorities. See, "Der Wohnungsbau in der Bundesrepublik Deutschland-Zwischenbilanz und Vorschau," *Der Bundesminister* fuer Wohnungsbau (Bonn, Germany: 1951.)

of private funds in housing. Most of the DM 17 billion of this kind was used together with tax-stimulated and public funds in financing rental housing from 1950 through 1956 while not more than one-tenth of all units produced during this period was financed exclusively in this way. In the last two years the construction of single and two-family housing for private ownership has made great progress however, representing one-third of total unit completions now.

Financing Process

The amazingly high output of housing in the last six years, amounting to over three million units, was made possible by skillful financing methods through government subsidies and incentive taxation. In this process the three-fold problem of a general capital shortage, the retention of all business saving for self-financing and high construction costs, had to be overcome. The housing program succeeded fully not only in solving these problems but also in fitting production schedules smoothly into the dynamically expanding economy competing for scarce materials and financial resources. The closing of the gap between high construction and mortgage costs on the one hand and low-cost rents within the paying capacity of most wage earners became extremely helpful in the fight against inflation.

Housing construction required outlays of DM 65 billion equal to one-fifth of total gross investment expenditures from 1950 to 1957.[14] Table III shows annual expenditures on housing according to the sources of financing from public and private funds. The former were given to private builders as low-cost second mortgages (at 0.5 percent) comprising one-third of the total spent during this period. While this contribution was decisive in making possible the high rate of housing completions, it amounted to only a small share, as a rule less than 8 percent, of annual total public expenditures. Public loans were most important during the early phase of the housing program when private savings lagged and tax incentives for the channeling of long-term funds into housing had not yet been provided. Local communities furnished about two-thirds of all public mortgage money in contrast to the federal government which is playing a minor role as a direct source of such funds.[15]

While public subsidies to housing made possible a high rate of completions, they

TABLE III—SOURCES OF FUNDS USED IN PRIVATE RESIDENTIAL CONSTRUCTION IN WEST GERMANY AND PUBLIC FUNDS AS PERCENT OF TOTAL: 1950-1957*

YEAR	Public Funds[1] in Billion DM	Private Funds[2] in Billion DM	Total in Billion DM	Public Funds as Percent of Total
1950.....	1.6	2.2	3.8	42
1951.....	2.2	2.7	4.9	45
1952.....	2.4	3.9	6.3	38
1953.....	2.7	5.1	7.8	35
1954.....	3.0	6.0	9.0	33
1955.....	3.3	7.5	10.8	30
1956.....	3.6	7.7	11.3	32
1957.....	3.5	8.0	11.5	31
Total.....	22.3	43.1	65.4	Average—34%

* *Sources:* For 1950-1953, see W. Fey, *op. cit.*, in Table I. For 1954-1957 see *Bayerische Vereinsbank*, *op. cit.* in Table II.

[1] Provided as mortgages from regular budget sources of the federal government, the Laender and local authorities including the coal tax of the Miner's Housing Act of 1951, and by borrowing of small amounts.

[2] Provided as mortgages from private sources either tax-stimulated, or freely by homebuilders and owners. Loans given by Social Insurance institutions and the Reconstruction Loan Corporation are included.

[14] Consisting of expenditures on new plant and equipment, residential and all other construction, changes in inventories and net foreign investment.

[15] By the end of 1957 public authorities had built up over DM 20 billion assets in mortgages comprising one-half of their total lending to private housing and industry. These public savings are now criticized as having been made at the expense of the taxpayer. See also, D. Duhmer, *Das Oeffentliche Vermoegen* (Bonn, Germany: Institut Finanzen und Steuern, pamphlet 35, 1955).

did not suffice to finance the low-cost rental units needed by the average wage earner. In comparison with 1938, building costs had risen by 170 percent by 1957 while controlled rentals were permitted to advance only by 27 percent. During the same time, the increase in the cost-of-living amounted to 80 percent. Correspondingly, the price of an average dwelling unit of RM 7,000 in 1938 rose to DM 14,000 in 1949 and has now reached DM 20,000. On the other hand, average rental costs that amounted to RM 19 per room or RM 50-60 monthly per dwelling unit (without utilities) in 1938 have risen only to DM 23 per room at present.[16] Even the doubling of the size of the individual public mortgage from DM 3,500 in 1949 to DM 7,000 and above in 1956 did not suffice to bring rising construction costs into line with controlled rentals. Consequently, the financing of low-cost rentals had to be done through various additional measures outside of public mortgages, such as the lengthening of amortization for loans to 30 years and above all by tax incentives. More than one-half of all private funds furnished for residential construction from 1950 through 1956 as shown in Table IV, was incentive-connected. As pointed out previously, users of these funds had to comply with the provisions of social housing by limiting the size of the units they built and renting them at controlled rates. The largest supply of private housing funds came through the introduction of tax-exempt mortgage obligations. Next in importance were the funds collected by building associations. By the provisions of tax incentives, housing demand drew additional DM 18 billion into mortgages from 1950 to 1956 inclusive.[17]

[16] *Jahrbuch fuer die Bundesrepublik Deutschland, 1957*, Housing Section.

Incentive Devices

Tax incentives which became responsible for one-half of all private savings used as mortgage funds for immediate financing of housing operated in three ways. Firstly, they encouraged personal saving at credit institutions which would use them as mortgage loans. Secondly, they attracted private funds—of individuals or business—for the purchase of tax-exempt mortgage and communal bonds. Thirdly, they provided large personal income or corporation tax savings for individuals and business firms who were willing to furnish loans for housing.

TABLE IV—SOURCES OF PRIVATE FUNDS USED IN PRIVATE RESIDENTIAL CONSTRUCTION IN WEST GERMANY BY USE OF TAX INCENTIVES AND ALSO WITHOUT AID: 1950-1956*

Sources	By Tax Incentive in Billion DM	Without Aids in Billion DM	Total
Savings Banks	2.6	2.9	5.5
Life Insurance Companies[1]	0.8	1.7	2.5
Building and Loan Associations[1]	1.7	3.3	5.0
Mortgages and Communal Obligations	8.8	3.4	12.2
Loans Made by Business from Profits[2]	4.3	0	4.3
Free Funds of Builders, Owners and Others[3]	0	5.6	5.6
Total	18.2	16.9	35.1

* *Sources: Bundesbaublatt*, Number 4, 1954, p. 147; R. Tarnow, "Finanzierungskrise im Wohungsbau," *Gewerkschaftliche Monatshefte*, February 1957, p. 104.

[1] One quarter of total saving in this form was credited to incentive saving which authorized larger than normal deductions from taxable income for these purposes.

[2] Under Section 7(c), Income Tax Law, interest-free loans.

[3] Including mortgage loans by Social Security Institutions and the Reconstruction Loan Corporation.

[17] Total personal savings accumulated in Germany from 1950 through 1956 amounted to DM 53 billion in the form of DM 22 billion deposit savings, DM 10 billion premium payments to life insurance and building and loan associations, and DM 21 billion new net issues of bonds (predominantly) and some stocks. See, Bank Deutscher Laender, *Monthly Report*, July 1957, p. 85.

The accumulation of personal savings was stimulated by permitting the deduction from taxable income, within certain limits, of premium payments for life insurance, contributions to building and loan associations and simple savings deposits in banks. Savings deposits contracted under the incentive law—they could not be withdrawn for three years—amounted to a total of DM 2.6 billion, collected from the introduction of the law in 1949 to its termination in 1955.[18] Tax incentives greatly stimulated savings at life insurance and building associations making them an important source of long-term funds for housing.

Building Savings Associations (*Bausparkassen*) in Germany are playing an increasing role in the development of institutional saving. Not only have they become the principal collectors of deposits for immediate and direct use in housing but they also are constructing a great portion of the publicly-assisted rental housing units. On the average, they continue to build and to own one-half of all units erected under social housing from 1948 to the present, equalling one-third of all dwelling units constructed during this period.[19]

The First Capital Development Law of 1952, in force until 1955, introduced tax-exempt bonds which became the most important factor in raising housing funds from private sources. In addition to the assistance to housing, this law succeeded in reactivating the capital market in Germany which until then had been non-existent. By this tax stimulation, a total of DM 9 billion for housing could be raised in less than four years. The bonds issued under this privilege had to carry the low interest rate of 5 percent—a rate far below the free market rate in Germany even today when liquidity is rising—at a time when no bond money could be raised anywhere and when long-term loans to industry were set at 8 percent and over. While tax-exempt bonds thus yielded only moderately to the lenders, the inducement to buy them was so great not only because the interest income from them became tax-exempt but also because they could be deducted, within certain limits, from taxable income. In spite of these tax benefits, purchases of these bonds by individuals amounted to not more than 7 percent of the total while the bulk was bought for investment by private credit institutions, business firms and social security agencies.

A third major type of tax incentives attracted business profits into mortgages for new construction. This device was created to encourage an alternative to self-financing for entrepreneurial profits. While the lender had to give these loans free of interest for use in social housing he could deduct them from his taxable, income without limits.[20] A total of DM 4.3 billion was made available that sufficed to finance one-eight of all housing as long as this provision existed from 1950 through 1954. It is generally agreed that the strategic importance of these so-called section 7-c loans of the income tax law was very great as they filled the gap that could not be financed by public funds or all other forms of incentive financing. This provision was

[18] The so-called Lex Preusker of 1956 reactivated incentive deposit savings to reduce the shortage of housing funds and required insurance and credit institutions to turn over 70 percent of such saving for housing. Taxpayers, furthermore, were permitted to deduct a maximum of DM 7,000 annually from their taxable income for incentive savings for 1957 and 1958. The normal deduction for special expenses limits this maximum to DM 1,200 since the last income tax reform in force on January 1, 1958.

[19] Associations construct housing on their own account, giving their members the first claim to rent. The Bausparkasse der Freunde Wuestenrot in Ludwigsburg, the biggest non-profit organization is, like the majority of these builders, exempt from income and all other taxes.

[20] By giving such loans, the lender could avoid, sometimes for several consecutive years, the payment of any income tax at a time when confiscatory rates in medium- and higher-income brackets prevailed. Upon repayment, these loans again become taxable income.

frequently used in the financing of factory housing which became a symbol of a dynamic and social policy of industry.[21]

Two additional measures for the stimulation of home ownership should be mentioned. From 1949 on, accelerated depreciation was approved for housing permitting to write-off 10 percent of the construction cost in the first year, and an additional 10 percent in the second year after completion. From then on, 3 percent annually is to be written off for ten years with the remaining half of the original cost charged off subsequently by any regular method.[22]

The Home Building Premium Law of 1952 finally introduced a direct subsidy for small income earners who plan to own a home. This federal subsidy, limited to a maximum of DM 400 annually per family, can be advantageously used by taxpayers instead of the standard deduction if the latter provides tax savings below this amount. In 1955 all incentive measures for housing with the exception of the last two were abolished though deposit saving incentives were subsequently reactivated for 1957 and 1958.

Summation

Germany was faced by a catastrophic housing shortage in 1945. Over 2 million dwelling units destroyed by war had to be replaced and housing for 10 million immigrants subsequently provided. Workers without shelter could not be expected to expend the maximum physical effort needed for rapid recovery. In housing construction the financing problem became the most serious in view of the absence of individual savings and the non-availability of bank credit for this purpose. To the small extent that houses could be built without government aid, rentals greatly exceeded the paying-power of the average wage earner.

Public assistance to housing made possible the construction of over 4 million privately-owned dwelling units from 1949 through 1957, adding to the housing supply at an annual rate of 5 percent or five times the normal rate. The average unit contains 3 or 4 rooms and is part of a 3-family house. These units are rented at low cost and, in spite of a moderate advance in rents since 1949, require not more than 12 to 15 percent of the disposable income of those who rent.[23] Low-cost rental housing became a major factor in keeping down the cost of living and consequently pressures for wage increases leading to the familiar wage-cost-price spirals. In spite of over-all planning and public assistance to housing, Germany has not been turned into a government-run "welfare state." Its housing is still built, owned and administered by private citizens although a total of DM 22 billion low-cost mortgages, out of total housing expenditures of DM 65 billion from 1950 through 1957, came from public sources. The former amount, however, required not more than 7 percent of all public revenues during this period and made it not necessary to increase the tax burden on the wealthier segments of the population.

Tax incentives, while they were in force, procured DM 18 billion private funds for housing by special deposit sav-

[21] While these loans became the heart of the entire incentive scheme for aid to housing, frequent abuse of the law by borrowing of funds instead of furnishing them from original profits discredited the system of incentive taxation in general leading to its termination in 1955.

[22] With write-off limited to original cost, all savings are in the nature of temporary interest-free public loans. Nevertheless, tax deferrals are substantial as long as the fast write-off rates prevail.

[23] Controlled rentals advanced by 20 percent or at the rate of over-all increases in the consumer price index from 1950 through 1957. However, hourly earnings in industry increased by 55 percent during this period. Likewise, so-called mass income, consisting of all wages, salaries and public transfer payments gained rapidly, more than doubling from DM 45 billion to DM 95 billion during the same period. See Bank Deutscher Laender, *Monthly Report*, June 1957 p. 27.

ings, the issuance of tax-exempt mortgage bonds and the channeling of business profits. Large income tax savings or deferrals induced these lenders to furnish capital at no interest cost or at 5 percent at a time when funds for other uses could not be raised at 8 or 10 percent. Private sources furnished freely provided the remaining DM 25 billion from 1950 to 1957 but they too benefited by faster amortization schedules for housing and other tax advantages available to every builder.

Public authorities succeeded in their fund-raising schemes without the payment of direct subsidies but had to forego large potential tax revenues.[24] These losses, however, were minor relative to the benefits from new housing for the entire economy. The government could have proceeded differently either by furnishing more mortgage funds or by the payment of subsidies to builders or rental users. Without some form of assistance to reduce the costs of free market rents, not even a minor housing program could have been put into operation as high building costs would have restricted the market to a small number of well-to-do people. Larger government assistance, however, would have led to an increase in the tax burden or a reduction in other budgetary expenditures already tightly calculated. Public borrowing was unacceptable to government officials and the public because of its inflationary implications. The payment of direct subsidies to any category of taxpayers by arousing competing demands of other groups would have immensely complicated the fiscal and political acceptance of such program. For these reasons the tying-in of lending of private funds for housing with tax savings for the lender during years of steeply graduated income taxation, became the most expedient and successful solution of the problem.

At present, the social housing program for the construction of 300,000 units annually, aided with publicly-financed second mortgages at 0.5 percent is to continue until the end of 1962. These units will again represent from one-half to three-fifths of total housing construction as has been the case since the introduction of the law in 1950. Individual home ownership was lagging at first, perhaps because most people prefer tenant contracts at controlled low rents as long as their income does not permit an easy financing of home building. Significant gains are being made now and the share of owned homes has increased from one-tenth of all units produced in the earlier years of reconstruction to three-tenths in 1957. Likewise, single or two-family dwelling units comprise one-half of all construction. In view of the continued housing shortage, the continuation of public assistance and the availability of ample capital at lower interest rates, housing construction in Germany is bound to progress at a high rate.

[24] Total public assistance to housing, directly or indirectly, was substantial for the years from 1948 through 1957. Direct mortgage lending amounted to DM 22.8 billion; the federal government and the Laender lost DM 1.5 billion potential tax revenues, chiefly from income taxes, by the introduction of saving incentives and tax-exempt bonds. Local authorities will not collect DM 3.7 billion as result of the temporary exemption from real estate taxes. In addition, tax deferrals by faster write-off and by the granting of loans from business according to section 7 c Income Tax Law, amount to DM 9 billion so far. Principal tax losses, therefore, are in the nature of long-term, interest-free loans to housing. Other assistance to housing—consisting of direct subsidies for home building (DM 400 million spent so far), the sale of cheap public land, partial refund of the turnover tax, elimination of public fees and the use of some Marshall Aid funds through lending by the Reconstruction Loan Corporation—should be mentioned.

Reports and Comments

Structural Changes in Agricultural Finance in Southeastern Florida

THE purpose of this article is to present the rather significant changes in agricultural credit arrangements which have taken place in southeastern Florida in the last two decades.[1] A brief summary of the major changes in agricultural organization and land use and quantitative data regarding the amount, source and terms of agricultural credit are presented.

Agricultural Organization and Land Use

There have been signficant changes in the organization of agriculture since 1940. Production has shifted from a high degree of concentration on fresh vegetables to a more diversified pattern in which fresh vegetable products play a leading role but are relatively less important (Table I). Further, the farms have increased considerably in size and value (Table II). During this period, value of agricultural production sold increased five-fold,. and the acreage devoted to agricultural production increased 238 percent. The increase in land in farms has occurred in the face of intense urban-rural land use competition as Miami, Fort Lauderdale and West Palm Beach (among others) encroached on agricultural areas.

TABLE I—Total Value of All Agricultural Products Sold and Percent of Total Value Comprised by Specified Agricultural Products Sold in Broward, Dade and Palm Beach Counties, Florida: 1940 and 1954

Year	Value of All Agricultural Products Sold	Percent of Total Compromised by:					
		All Crops Sold	Vegetables Sold	Horticultural Specialties Sold	Fruits and Nuts Sold	Cattle and Calves Sold	Whole Milk Sold
		%	%	%	%	%	%
1940.....	$16,197,260	76.4	60.8	4.5	5.8	1.5	19.3
1954.....	82,525,389	71.0	46.6	8.9	6.6	7.5	26.1

Source: Computed from *U. S. Census of Agriculture*, Bureau of the Census, United States Department of Commerce, Vol. 1, Part 18, 1940 and 1954.

The capital requirements for agricultural production in this area have been and are quite high. This is particularly true in the production of fresh winter vegetables. For example, in the crop season 1956-57, the cash inputs for tomatoes, celery, green peppers and pole beans were in excess of $500 per acre.[2] In most instances the annual cash expenses are two or three times the long-term investment in land and equipment.

Agricultural Credit Prior to 1947

Prior to 1947 severe external capital ration-

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[1] Broward, Dade and Palm Beach Counties comprise the area known as Southeastern Florida.

[2] D. L. Brooke, "Costs and Returns from Vegetable Crops in Florida, 1956-57 Season," University of Florida Agricultural Experiment Stations, Agricultural Economics Mimeo Report 58-8, March 1958.

TABLE II—SPECIFIED FARM CHARACTERISTICS IN BROWARD, DADE, AND PALM BEACH COUNTIES, FLORIDA: 1940 and 1954

Year	Land in Farms	Number of Farms	Average Size of Farm	Average Value of Land and Buildings Per Acre
	acres		*acres*	
1940.....	228,337	3,011	75.8	$116.86
1954.....	773,943	2,809	275.5	321.12

Source: Computed from *U. S. Census of Agriculture*, Bureau of the Census, United States Department of Commerce, Vol. I, part 18, 1940 and 1954.

ing existed in southeastern Florida.[3] In addition to this shortage, credit terms were not tailored to suit the specialized needs of agriculture.

Long-Term Credit. Of all the forms of loans, long-term credit was the most difficult to obtain and the most needed.[4] Prior to January 1, 1947, only $491,500 in long-term mortgages were recorded on sample tracts in Palm Beach County (Table III).[5] Of this amount, private individuals were the chief source (78 percent) with commercial banks and Federal Land Banks supplying approximately 8 percent each. No loans were noted by insurance companies. Nearly all loans called for repayment in a relatively short period of time and on the average were quite small in amount (Table IV).

Short- and Intermediate-term Credit. Total mortgage loans of this type on the sample tracts amounted to slightly over $1,000,000 prior to 1947 (Table V). The chief sources of this type of loan were the production credit associations and Farmers Home Administration, and the commercial banks. These loans were relatively small.

Of course, mortgage recordings do not reflect the total amount of shorter-term credit actually used since many loans under one year are not secured by real estate. Further, the vegetable farmers in particular were quite dependent on vegetable shippers and broker and commission houses, as well as fertilizer dealers, merchants and individuals

TABLE III—TOTAL VALUE OF LONG-TERM MORTGAGES RECORDED ON SAMPLE TRACTS AND PERCENT OF TOTAL VALUE FURNISHED BY SPECIFIED SOURCE IN PALM BEACH COUNTY, FLORIDA: 1940-46 and 1947-55

Period	Total Amount Recorded	Percent Furnished by Specified Source					
		Insurance Companies	Commercial Banks	Federal Land Banks	Farmers Home Administration	Private Individuals[2]	Other[1]
		%	%	%	%	%	%
1940-1946.....	$ 491,502	0.00	8.12	8.87	0.00	78.15	4.06
1947-1955.....	5,596,810	38.20	2.86	2.67	1.17	47.03	8.06

[1] Excluding a $7,500,000 loan by the Reconstruction Finance Corporation to the United States Sugar Corporation.
[2] Including purchase money mortgages.
Source: Public Records of Palm Beach County, Florida.

[3] The analysis is divided into two time periods; prior to January 1, 1947, and after December 31, 1946. The following time classifications are used to distinguish the type of loan; short- and intermediate-term credit, under 3 years; and long-term credit, 3 years and over. It is recognized that any time classification of credit leads to a somewhat unsatisfactory grouping. However, these particular categories best suit the purposes of this study.

[4] Mortgage recording data were determined from the Public Records of Palm Beach County. All mortgage recordings on sample tracts in 16 townships of the county were noted for the period 1940-1955 as to amount, terms and lendor. The Public Records of Dade and Broward Counties are not set up in such fashion as to efficiently observe agricultural credit since deeds and mortgages are recorded chronologically. The records of Palm Beach County are so constructed that deeds and mortgages are recorded chronologically in tract books. Agricultural credit experience, however, is quite similar in all three counties.

[5] This excludes a $7,500,000 to the United States Sugar Corporation by the Reconstruction Finance Corporation.

TABLE IV—SPECIFIED CHARACTERISTICS OF AGRICULTURAL LOANS ON SAMPLE TRACTS IN PALM BEACH COUNTY, FLORIDA: 1940-46 and 1947-1955

Type of Loan and Period	Median Interest Rate	Range of Interest Rates	Median Length of Loan	Median Size of Loan	Range of Loan Size
	%	%	*years*		
Long-Term Loans					
1940-1946	5	4–10	3	$ 7,500	$ 780–130,000
1947-1955	5	3–10	7	33,000	1,500–316,000
Short-and-Intermediate Term Loans					
1940-1946	6	0–10	...	$ 5,000	$1,000–100,000
1947-1955	6	3–10	...	33,500	600–1,000,000

Source: Public Records of Palm Beach County, Florida.

for credit.[6] The cost of credit from these sources was usually quite high.

Agricultural Credit After 1946

The period after 1946 is characterized by a substantial easing of credit conditions in southeastern Florida. The chief alterations to the credit structure were the extensive entry into the credit market by insurance companies and the development of credit terms that more adequately met the special needs of agriculture in this area.

Long-term Credit. The chief sources of this type of credit are now insurance companies and private individuals (chiefly purchase money mortgages). From January 1, 1947 through 1955, insurance companies loaned $2,138,000 on the sample tracts and during the same period loans extended by private individuals amounted to $2,632,000.[7] The median length of long-term loans has increased while interest charges have remained largely unchanged. Insurance company loans were larger than other types and the repayment schedule was substantially longer. One significant difference in the pattern of agricultural loans in this area, when compared to other sections of the country, is the rather insignificant participation by the Federal Land Bank in long-term lending.

Short- and Intermediate-term Credit. There has been a considerable expansion in this type of credit since World War II. The principal source (on the basis of mortgage recordings) remains the production credit associations, while commercial banks and private individuals have become relatively less important providers of this form of credit. Further, there has been a reduction in the dependence on merchants, independent shippers and broker and commission houses, fertilizer companies, etc.[8] In addition, repayment schedules have been altered to more adequately meet the highly seasonal pattern of agricultural activity.

The Impact of Changes in Agricultural Finance

The changes in the structure of agricultural credit in southeastern Florida have contributed appreciably to the growth of its agricultural enterprises and industries. Prior to

[6] J. Wayne Reitz, *Production Credit in Florida Citrus and Vegetable Areas*, University of Florida Agricultural Experiment Station Bulletin 367, January, 1942, p. 98.

[7] In 1955, the representative of one insurance company stated that at that time the company had loans amounting to $15,000,000 in Palm Beach County alone. There is no single factor which fully explains the entry of the insurance companies into the agricultural credit market in this area. Certainly, the increases in funds available to the insurance companies, the development of larger scale and more diversified farms, the promise of more adequate water control through the Central and Southern Florida Flood Control Project and the rapid urban growth are all contributing factors.

[8] A significant amount of this type of credit is still used, however. Clark estimates that 50 percent of the shorter-term credit needs of vegetable farmers is still furnished by these sources (see C. E. Clark, "Florida's Truck Crop Production," *Monthly Review* of the Federal Reserve Bank of Atlanta, November, 1953.) Actually, many of these sources were unwillingly in the credit business and were quite happy to shift this function to others.

TABLE V—TOTAL VALUE OF SHORT- AND INTERMEDIATE-TERM MORTGAGES RECORDED ON SAMPLE TRACTS AND PERCENT OF TOTAL VALUE FURNISHED BY SPECIFIED SOURCE IN PALM BEACH COUNTY, FLORIDA: 1940-1946 and 1947-1955

Period	Total Amount Recorded[1]	Percent Furnished by Specified Source			
		Commercial Banks	Production Credit Associations and Farmers Home Administration	Private Individuals	Other
		%	%	%	%
1940-46.....	$1,155,134	29.14	59.88	7.91	3.07
1947-55.....	5,211,520	8.33	83.98	3.85	3.84

[1] The total for 1947-55 understates the actual amount of credit since production association mortgages provide for drawing up to the face amount at any time during a six-year period. These mortgages were counted only for the year in which they were recorded.

Source: Public Records of Palm Beach County, Florida.

the end of World War II the supply of credit was inadequate to foster a sound orderly development. However, the flexibility of lending institutions coupled with the growth in available funds locally and nationally has provided the means enabling a rather remarkable expansion in agricultural output.

The increased availability of long-term agricultural credit has provided greater stability to agricultural operations. Due to the non-availability of this type of credit, vegetable enterprises in particular were extremely risky endeavors. In addition to weather and price vagaries, the nearly 100 percent short-term-financed vegetable farmers were faced with the additional hazard of meeting large short-term obligations. More adequate long-term financing has definitely contributed to stability in vegetable production.

The flexibility of vegetable producers in management decisions has been enhanced by the decline in dependence on independent vegetable shippers and broker and commission houses for credit. In most cases loans from these sources were granted specifying the crop to be produced and requiring that the produce be handled through the grantor of the loan.

The failure of commercial banks to participate fully in the expansion of agricultural credit has been due both to the traditional lack of understanding of agricultural problems and opportunities on the part of commercial bankers and the tremendous financing requirements of the rapidly expanding urban sector of the area.

The degree of flexibility of lending institutions can either contribute to or retard the rate of economic development. Thus, analysis of changes in the credit structure of particular areas may provide both a more adequate understanding of economic growth and a sounder basis for decision-making by lending institutions.

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Commentary on "Economic Backwardness and Economic Growth"[1]

(Editor's Note. Some months ago Dr. Motheral was invited to review *Economic Backwardness and Economic Growth*, which is the title of a book by Harvey Leibenstein, published in New York by John Wiley & Sons in 1957. As it soon becomes apparent to the reader, this is more than a review of a book. In fact, the reviewer takes us into some of his own theory on economic backwardness and economic growth.)

"NOTHING in this book should be taken to be in support of any measure . . . . to achieve development." Furthermore, " 'correct' social goals, ethical norms, moral restraints, and political values . . . . are not considered in this volume." There, in one of the latest of the mountain a building of volumes dealing with development economics, you have it. An intellectual exercise in a vacuum of human values—nothing more.

Unlike most of his contemporaries, this author stresses almost painfully the utter lack of utility in his "abstract, non-empirical, and non-historical approach." Such candor is admirable even though the objective is unattainable, and even though the method leads inescapably to certain dubious conclusions that compromise neither applicable data nor good theory.

The first seven chapters of this book undertake to describe the familiar characteristics of backward economies and to set the stage for the "critical minimum effort thesis" which carries the burden of analysis through the fifteenth and last chapter. On pages 40 and 41 the characteristics of underdeveloped areas are summed up in a long list of economic, demographic, cultural, political, and technological problems. The list is not only adequate but calculated to induce despondency among those of us who are not content to rule solutions out of bounds. Gloom is promoted at this stage for a purpose: The purpose of arguing for big economic stimuli as opposed to small, timid stimuli.

Underdeveloped economies, Leibenstein reasons, are encircled by vicious circles. The implication is that "the determinants of economic backwardness are mutually consistent." Small production gains are quickly absorbed by the growing population and by increased per capita consumption. More advanced countries have benefited at some point from massive stimulation that broke through the production-population-consumption-capital accumulation circle; under-developed countries have not. It remains only to determine the "critical minimum effort" required to produce an appropriate shock effect on per capita incomes.

The rest of the book struggles with how to do it and counsels boldness. Leibenstein stumbles into a few pitfalls in the process which seem to be associated with the subtleties of a classical influence and the practicalities of respectable scholarship. He cannot avoid flirting with "non-economic factors" and "institutional rigidities" but never quite dares to embrace them. His tussle with the priorities to be assigned to agriculture is especially awkward. After noting that agricultural life and production are paramount in all underdeveloped countries, he then retreats into the safety of a conclusion that "is not especially strong," to wit, that development efforts should be concentrated on the industrial sector.

It is here that the weakness of a highly generalized analysis lacking value content is revealed most glaringly. No decision in economic planning is quite so crucial as that which determines resource allocations among the various sectors of the economy. And so great are the variations in the bases for decision from one country to another that generalization is virtually dangerous. No matter how logical the technical reasoning, it is reckless to associate the agents of growth with industry at the expense of agricultural development. For reasons far more urgent than those advanced by Leibenstein, many underdeveloped countries must direct their energies to agriculture first before diverting a high percentage of resources to industry.

This issue is worth examining in more detail. The arguments advanced for giving high priority to industry include a belief that an urban atmosphere is more conducive than agriculture to creating or expanding an entrepreneurial class and for promoting the spread of new skills and innovations. The marginal propensity of small landholders and tenants to consume is adjudged to be close to unity. Doubt is expressed as to whether landlords as a class can be counted on to save and invest productively. Finally, traditionalism among farm people militates against

rapid population adjustments to available resources.

That there is an element of truth in each of these propositions is not to be disputed. The missing elements, though, are precisely those that were excluded by the author in his opening gambit—no social goals, ethical norms, moral restraints, or political values.

Without social goals, economic methodology dissipates into academic nonsense. Ethics are omnipresent, even in the breech, and he who denies them is baying at the moon. Moral restraints hold an indivisible partnership in anybody's economy, if there happens to be an identifiable economy. Fine distinctions between political values and economic realities are as antedated as stone in the Bronze Age.

The same urban atmosphere that is presumed to encourage the rise of entrepreneurship also squanders development funds on atrocious types of conspicuous consumption. Peasants do consume what they require and can obtain for filling empty bellies, but their horizons have been known to rise swiftly under strong impulse. Landlords are not renowned for venturing their capital outside of agriculture, but millions of them diversify their investments for hedging purposes. Farm people the world over practice standpatism out of the lessons of survival, but it is they who are among the first to make the move toward opportunity wherever it appears and, after convincing demonstration, who change their ways of farming and living for something better. The whims of nature are scarcely more domineering than the tides of commercial-political power.

A middle class can be created at least as easily in the country as in the city where impersonal relations act especially harshly as a suppressant to human dignity and ambition. Viewed independently of nonagricultural employment outlets, there are two basic requirements for the economic metamorphosis of the farm population. First, the man-land ratio must be reasonably low and, second, anachronistic institutional forms must be recast. Development at an effective rate obviously cannot be accomplished without the former and economic incentives cannot be provided without the latter. The institutions that must be altered center about land reform and include adequate credit and marketing facilities above all else. Economic progress and feudalism are totally incompatible.

Thus many factors conventionally labeled "non-economic" are in fact decidedly economic both in their causes and their consequences. If we are to abstract from economics at all, it might be in terms of such socio-political matters as nationalism and the drive for national security. In Pakistan, these considerations figure prominently in a policy aimed at self-sufficiency in the production of foodgrains. But these are real and vital forces, and for an economist to ignore them is to confuse scientific objectivity with intellectual sterility.

It is to Leibenstein's credit that, notwithstanding the disclaimer, he repeatedly takes account of what he has chosen to define as non-economic factors. In the midst of disowning welfare economics, he accepts per capita income as his index of development and its maximization as the central objective of economic activity. Do not such measures have a clear welfare connotation?

Like all economists who prattle about their immunity to subjective values, Leibenstein possesses a generous stock of personal convictions. The significant one is his faith in large-growth stimulants as opposed to small-growth stimulants. This sensible bias is propounded systematically and with determination. The documentation which accompanies it is exceptionally valuable to the realistic economic planner (who is promised nothing at the very outset).

For American policy makers who determine the magnitudes of programs of economic aid the moral is plain. What was sufficient for the advanced countries of Western Europe under the Marshall Plan might be a mere sop to the underdeveloped countries of Asia and Africa. Leibenstein furnishes one technique for assessing the costs of a "critical minimum effort," a task which this writer has not tried to perform. It is apparent, however, that aggregate costs will be high and perhaps astronomical. If they should exceed the limitations imposed by domestic politics in the United States, it would be timely to consider (a) ruthless selection of countries which can utilize aid at a level well above the critical minimum and (b) fewer projects of much greater scope and a higher yield potential.

For students of development problems this book has the merit of being well written. Whenever the author resorts to the growing body of jargon in this field, he is decent enough to define his terminology instead of trying to flatten the reader with it.

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Flood Insurance: Can A Feasible Program Be Created?

THE federal Flood Insurance Act of 1956 was the first attempt in the United States to utilize insurance techniques to alleviate the hardships created by flood damage to real estate.[1] This article attempts to analyze the problems which arose during the brief life of the Act and to indicate which of these problems were due to the composition of the federal legislation and which were due to the decisions made by the agency responsible for its administration. Also, there is proposed a set of principles which appear vitally necessary to any future workable program of flood insurance.

Developed in the face of opposition by most of the private insurance industry, the federal flood insurance legislation had unimpressive results: after a period of one year, the Federal Flood Indemnity Administration created in the Act ceased operations when Congress not only failed to appropriate necessary subsidy funds to finance the insurance program but declined to appropriate operating funds for the agency. The effective termination of the Federal flood insurance program by financial starvation left unresolved most of the problems inherent in the concept of flood insurance. Although the Flood Insurance Act is still on the books as Public Law 1016 it appears unlikely that if and when an attempt is made to enact another flood insurance law it will follow the precise lines of the 1956 legislation.

During its brief life the Federal Flood Indemnity Administration (hereafter abbreviated as FFIA) did not succeed in selling a single insurance policy nor did it resolve the very complex issues raised by flood insurance in general or the Flood Insurance Act of 1956 in particular. It did, however, develop a body of experience that must be taken into account in any future attempt to work out a successful program of flood insurance. Much of this experience was related directly to the particular provisions of the 1956 Act; other aspects, however, are integral to any program of flood insurance and pose questions that will have to be answered before a feasible flood insurance program can be developed.

[1] The Federal Crop Insurance program, in operation since 1938, insures crops in certain areas from all unavoidable damage including floods.

Need for Flood Insurance

The demand for federal participation in a program of flood insurance that led to extensive Congressional hearings and subsequently to the adoption of the Flood Insurance Act of 1956 can be traced to a series o disasters that struck the United States in 1954 and 1955. Hurricane Carol struck southeastern New England in August 1954 and did tremendous damage, particularly to the Narragansett Bay and Cape Cod areas. The following year, Hurricane Hazel swept the seacoast of North Carolina, leaving over 125 million dollars worth of damage in its wake. This same hurricane unleashed downpours of rain on Connecticut and other Northeastern States which caused catastrophic river floods. During the same period many other water-related disasters occurred ranging from mud-slides in California to river flooding in over a dozen states.

These flood disasters were not unprecedented: during the thirty years from 1925 to 1955 an estimated annual average of 350 million dollars worth of damage has been attributed to floods in the United States. Annual flood damage has ranged from the low year of 1931 when only 6.4 million dollars in damage was recorded, to 1955 when the damage figure exceeded one billion dollars.[2] Only a minute portion of this damage was even potentially insurable. Testimony before the Senate Banking and Currency Committee brought out the fact that, al-

[2] Figures cited are in constant dollars with 1950-51 as a base period. It has been estimated that annual damage to fixed property, exclusive of agricultural or indirect losses, averaged 165 million dollars. United States Weather Bureau estimates cited in *Federal Disaster Insurance Hearings*, United States Senate, Government Printing Office, Washington, 1956. p. 974.

though insurance from earthquake, tornado, and wind damage was commercially available, no insurance for direct flood damage such as that caused by river waters or hurricane-driven ocean tides could be purchased. One exception to this finding was a statement that Lloyd's of London would sell flood insurance at rates ranging up to $250 per $1000 of valuation. This served to underline the fact that the private insurance industry did not sell flood insurance except at prohibitive rates.[3]

The American Insurance Association, composed of most of the capital stock insurance companies in the nation, stated in 1956 that "insurance against the peril of flood cannot successfully be written." This opinion, reinforced by engineering studies of flood damage, resulted in a policy statement by the Association that ". . . . specific flood insurance covering fixed location property in areas subject to recurrent floods cannot feasibly be written because of the virtual certainty of loss, its catastrophic nature and the reluctance or inability of the public to pay the premium charge required to make the insurance self-sustaining." While the Association refrained from claiming that a federally subsidized program of insurance would founder on the same obstacles faced by a self-sustaining program, they did maintain that a subsidized flood insurance program would be ". . . . 'relief' in the guise of insurance . . ."[4]

Despite the general opposition of the private insurance companies, widespread demand for some form of flood insurance arose in many areas of the nation.[5] This demand was expressed with particular vigor in Connecticut, Rhode Island, and North Carolina, all of whose economies were seriously affected by the hurricanes of 1954 and 1955. Private citizens, industrialists, merchants, labor groups, and local governments joined in the request. As a result, a Sub-Committee of the Senate Banking and Currency Committee conducted hearings to determine if flood insurance was a proper subject for federal legislation.

Widespread agreement was expressed that only the federal government had the broad jurisdiction and financial strength needed to establish a flood insurance program with a significant chance of success. This was generally held to be due to the fact that, since flood disasters are often localized and unpredictable in frequency, floods might occur in a single state or region several times in a short period and thus prevent the wide pooling of risks necessary to a successful insurance program. Other agreements were: (1) A large source of funds is necessary to establish and operate a flood insurance program, especially in its initial stages when reserve funds tend to be low. (2) Subsidies in undetermined quantities are needed to reduce rates to the level at which flood insurance can be sold in quantity, at least during the early stages before really broad coverage can be achieved. (3) A successful flood insurance program should be so designed as to prevent the principle of "adverse selection" from operating; i.e., rates must be such that "good risks" not subject to frequent flooding find it desirable and feasible to participate. (4) Such a program should be related to principles of sound land use and operate so as to tend to decrease the amount of future construction in flood-prone areas.

Several areas of disagreement developed during the hearings. These ranged from outright and complete opposition to the entire program on the part of many experienced insurance executives to a proposal that flood insurance be made compulsory for all real property in flood plains, by which method rates could be reduced to negligible proportions.[6] Between these extremes two moderate positions developed, each of them represented by a senior member of the Senate Sub-Committee. Senator Herbert Lehman of New York (in company with several other senators) proposed a flood insurance program which was to include a federal subsidy sufficient so that rates could be at levels low enough to ensure widespread participation. Determination of the rates in the Lehman concept was to be made by a federal administrator and the federal government was to subsidize the difference between the in-

[3] *Senate Hearings*, pp. 640-641.

[4] All quotations in this paragraph are from American Insurance Association, *Studies of Floods and Flood Damage, 1952-1955.* New York, 1956. pp. 3, 6. The Association, despite its opposition, did offer to make its facilities available if a governmental program was established.

[5] One exception was Hovey T. Freeman, President of Manufacturers Mutual Fire Insurance Company of Providence, Rhode Island. He told a Senate Sub-Committee, "I think anything is insurable if we can get money enough and spread the risks." *Senate Hearings*, p. 632.

[6] Seymour Harris of Harvard University stated that a rate as low as 37 cents per $100 of coverage might be achieved with such a system. *Senate Hearings*, pp. 364-5.

come from premiums and the total cost of the program.[7] Senator Prescott Bush of Connecticut, with Administration backing, proposed a program whereby rates were to be set by a federal administrator within the limits of a subsidy restricted to (1) the overhead cost of selling insurance and administering the program and (2) forty percent of the remaining cost of the insurance. This second subsidy was to be paid in equal amounts by the federal government and any state in which flood insurance was sold, the state paying in proportion to the amount of insurance sold within its borders. Only in states which agreed to provide this subsidy would insurance be sold.[8]

The Flood Insurance Act of 1956

Congress adopted Senator Bush's legislation with only minor technical admendments. In addition to the items already mentioned above, the Act provided for (1) a new agency within the Housing and Home Finance Agency (FFIA) to administer the program, (2) several types of assistance in in addition to direct flood insurance (reinsurance and guaranteed loans, consideration of which was postponed pending experience in the direct insurance program), (3) restriction of the program, after an initial period of operation, to localities which adopted flood-plain zoning and related regulations of land use and to properties which were not in violation of local land use controls, and (4) provision for the program to operate experimentally for five years during which time a prime objective would be to develop techniques suitable for private, unsubsidized operation. Funds were provided for FFIA to begin the essential studies prerequisite to setting rates and developing a system for widespread sale of insurance policies and provision was made for the agency to borrow subsidy funds from the Treasury.

Administrative Experience of FFIA

In June 1957, just prior to its demise, FFIA issued press releases explaining that it was ready to sell insurance policies throughout the nation if Congress would provide subsidies for the administrative cost of the first year's operation. Although funds for the non-administrative portion of the subsidy were already available (because the original Act had provided that the Administration could borrow from the Treasury for this purpose), FFIA requested Congress to reappropriate them as a sign of faith in the program.[9]

Congress declined to vote any funds for FFIA. This action was followed by a statement by the Housing and Home Finance Agency Administrator that his agency would propose to a future session of Congress a completely revised program of flood insurance because it felt that FFIA had completely worked out the problems in the 1956 Act and that further study along these lines in the face of Congressional refusal to provide funds would be redundant.[10] However, he has subsequently stated that he has no current plans for revival of a flood insurance program. In addition, the final report of FFIA, summarizing agency experience and decisions, makes no mention of any attempt to re-establish the program.[11]

Perhaps the best available guide to the feasibility of the 1956 Act as it would have operated is to be found in two major administrative decisions made by FFIA during its brief life. These were: (1) Insurance rates were to be determined for major river valleys or coastal areas with additions to a basic rate for type of construction; the only location factor affecting rates was to be whether a building was sited over a stream or bay. Co-insurance requirements were to be utilized to make certain that a substantial part of the allowable maximum of $10,000 coverage per dwelling unit was purchased.[12] (2) The entire program was to be operated on a national scale from the start; no pilot areas were chosen for tests of the feasibility of various alternative techniques or for trial operation of the program.[13]

Apparently the first decision was the result of a choice between two very different concepts of rate determination. A study group that included representatives of the United States Geological Survey, the Corps of

[7] *Ibid.*, p. 3.

[8] *Ibid.*, p. 25. This concept was accepted by Congress in the Flood Insurance Act of 1956; however, the law provided that in the first year of the program, all subsidy cost would be borne by the federal government.

[9] Committee on Appropriations, *Hearings on the Third Supplemental Appropriation Bill, 1957*, United States House of Representatives, Government Printing Office, Washington, 1957. p. 177.

[10] Housing and Home Finance Agency Press Release. OA-1349, June, 1957.

[11] Letter to the author November 26 1957. See also, *Report on the Federal Flood Indemnity Administration*, Housing and Home Finance Agency, May 1958.

[12] House Appropriation *Hearings*, p. 180.

[13] *Ibid.*, pp. 176-180.

Engineers, and the Weather Bureau recommended a "variable" rate under which premiums would reflect the degree of exposure of a particular property to flood risk. A second study group, composed of private insurance company representatives, recommended a "flat" rate which would be uniform over large areas with variations for type of construction.[14] FFIA evidently chose a "flat" rate because of its apparent ease of administration. "Flat" rates, once determined, can be applied to a particular property by a layman with a limited amount of experience in structural examination; the "variable" rate would require detailed technical study of every area in which a rate was to be set and would require careful judgment (which might involve quite complex research) to determine a rate schedule. Although more difficult to administer, the "variable" rate appears to have significant advantages over the "flat" rate in avoiding the harmful effects of "adverse selection" whereby owners of buildings subject to great risk of flood damage would participate in the program while owners of buildings subject only to slight risk would decline to purchase insurance at the same rate. In a "variable" rate system each structure or class of structure pays a rate in direct proportion to the probability of flood damage. It should be to the advantage of both slight and great risks to participate in such a program. In the case of the "flat" rate the tendency must always be for owners of structures with less probability of damage than is implied by the area rate not to purchase insurance, leaving only owners of structures for whom the rate is fair or advantageous as participants. This tendency inevitably must cause the "flat" rate to fail to meet expected costs for, no matter how high the rate is raised, the same effect occurs and total losses tend to exceed premiums (with or without subsidies).

The second important decision made by FFIA, that the program was to be nationwide in scope from its inception, meant that no pilot areas were selected so that alternative techniques of rate setting or administration could be tried out. Since there is great variability throughout the nation in types of flood and in the quality of available historic data on flood frequency, intensity, and other characteristics, this decision meant that the program would be bound to encounter unpredictable situations in many localities. An instance of the value of pilot area operation has been provided by the federal crop insurance program which was reorganized on an experimental basis after six years of unsuccessful operation on a national scale from 1938 to 1944. The program subsequently had a history of successful experience, operating in carefully selected areas and insuring only selected crops from 1949 to the present. After each year's experience is analyzed the agency in charge of the crop insurance program expands its operations or changes its rates in light of new knowledge.[15] This experience appears to offer a more sound precedent for operation of a flood insurance program for fixed real property than does the decision to operate on a non-selective, national basis.

There were undoubtedly pressing reasons for the two administrative decisions described above. Nevertheless, in each case there appears to be even more impelling reasons in favor of those choices which were rejected. In any future program of flood insurance, these decisions should be reconsidered to determine if the technically more valid alternatives are not preferable.

Toward a New Program of Flood Insurance

The unfortunate outcome of the Flood Insurance Act of 1956 represents a considerable setback to the advocates of flood insurance. The need for such a program, however, remains quite as strong today as it was in 1956, attested to by a continuing series of flood disasters that have struck the United States. The author's experience as Director of the Eastern Kentucky Flood Rehabilitation Study, an emergency project concerned with developing a comprehensive flood damage prevention and economic rehabilitation program in a 32-county area of hilly Eastern Kentucky where three river valleys were ravaged by record-breaking flash floods in January 1957, revealed an urgent need for flood insurance in this area.[16] Evidence of a continuing need is also available from recent flood experience in Louisiana, Texas, Oklahoma and Kansas to name only a few flood-prone states.

[14] *Report on FFIA*, pp. 4-5.

[15] *Disaster Insurance Hearings*, United States House of Representatives, Government Printing Office, Washington, 1956. p. 92.

[16] David A. Grossman, *Flood Insurance and Flood-Plain Zoning*, Kentucky Legislative Research Commission, Frankfort, 1957.

Before this demand can be satisfied, it will be necessary to develop a program of flood insurance more workable than that established in the 1956 federal legislation. On the basis of available experience a workable flood insurance program designed to eliminate the undesirable characteristics of the 1956 Act should include the following factors: (1) The program must be subsidized at its inception and should remain so until commercially feasible operation is possible. If at all feasible, the subsidy should be wholly federal. (2) Rates should vary in proportion to the degree of risk as closely as technically and administratively feasible. (3) Pilot area operation to test alternative techniques is highly desirable. (4) Flood insurance should be developed as an integral part of a comprehensive national flood damage prevention program. Each of these items is examined to indicate the ways in which they would improve the concept of flood insurance in the 1956 Act.

1. *Federal Subsidy.* The most controversial political element in the 1956 Act appears to have been the provision which required (after the first trial year of operation) that no flood insurance could be sold in any state unless that state agreed to share in paying subsidy costs. The argument most often used to justify this provision was that, since all states are not subject to severe flood damage, a requirement of state participation would reduce the financial burden on states which were not seriously affected by floods. In opposition to state participation in subsidy payments there are the following arguments. (A) The requirement of state participation tends to increase the financial burden on areas already subject to hardship rather than spreading it over the widest possible base. Since the objective of flood insurance is to spread the social costs of flood damage to reduce its impact on a single individual or locality the federal government appears to be the most logical source of subsidy funds. (B) It seems to be impossible for many states to participate in this type of subsidy without constitutional amendments since they are restricted by constitutional prohibitions on the use of public funds for a private purpose. Since state subsidy payments as provided for in the 1956 Act would be paid to individuals whose properties were injured, this type of payment is believed to be unlawful in many states. Some form of subsidy appears essential in flood insurance; the most logical source of this subsidy appears to be the federal government.

2. *Variable Rates.* In the earlier discussion of the significant differences between "flat" and "variable" rates it was indicated that the "flat" rate is inherently undesirable because of the self-defeating effects of adverse selection that it would induce. Thus, it seems vitally necessary that any new program should be based on a rate that varies in a direct relation to the degree of exposure to flood damage.

3. *Pilot Area Operation.* The chief problem involved in the utilization of a variable rate is the difficulty of developing simplified, accurate techniques of rate determination and administration. The best approach to the solution of this problem appears to be the creation of one or more pilot programs of flood insurance in different parts of the nation. In this way valuable experience could be gained at relatively little overall cost and variations in methods of rate determination and administration could be tested. The Tennessee Valley region might be selected as one of these pilot areas because of the great amount of valuable data and experience that Tennessee Valley Authority engineers and planners already have in the field of flood damage prevention. At least one other experimental study might be desirable on the Atlantic Coast in an area subject to hurricane tidal wave damage. These two pilot areas could form a nucleus around which a nationwide flood insurance program could be developed.

4. *Relationship to Other Programs.* Flood insurance is only the newest of a series of interrelated techniques that have been developed to deal with the catastrophic damage done by river and hurricane floods. Neither flood insurance nor any other single technique alone appears to be adequate to eliminate the impact of flood damage, much less achieve the impossible goal of "flood control." However, all of the available techniques—used in unison so that they strengthen one another—can create an effective system to minimize flood damage. A comprehensive flood damage prevention program should include protective structures where feasible, regulation of land and water use, the relocation of flood-prone development, improved weather prediction and flood warning techniques, and programs of post-disaster relief and long-range rehabilitation of which flood insurance is only one

element. Some parts of this comprehensive system are already in operation in many flood-prone areas. In very few, however, is there more than the beginning of an approach to a comprehensive, integrated system.

The category of regulatory controls and guides to the use of land and water areas has been relatively little used to date as a means of flood damage prevention. This category includes flood-plain zoning and such related features as building codes and subdivision control regulations. Flood-plain zoning resembles the more customary forms of zoning which enable a community to regulate the type, intensity and nature of use of urban or rural land by dividing it into districts or "zones" within which only those uses or structures may be located or constructed which meet specified standards. In flood-plain zoning, lines are established within which no land may be used or structures erected which would be damaged by flood or would increase damage elsewhere by becoming floating debris. The precise determination of the location of the flood-zone in any community can be made only by planning and engineering technicians after study of the area concerned and its flood history and potential. Flood-plain zoning is especially applicable to areas not yet built up since it has no retroactive effect on existing development. The sound principle (established in the Flood Insurance Act of 1956) that no insurance should be sold in an area which has not adopted flood-plain zoning and related measures should be retained in any future flood insurance program. Flood insurance can be justified only if it operates to reduce the overall danger of flood. The only sure way to achieve this objective is to eliminate all unnecessary use of the flood plain.

The potential backing for a flood insurance program has already expressed itself once; the pressing need which was felt and demonstrated at that time has remained strong as a result of recent floods. What appears to be most lacking is development of feasible techniques by which insurance against flood damage can be offered to the greatest number of persons at a reasonable cost in a manner consistent with other means of flood damage prevention.

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Influence of Some Public Assistance Programs on Forest Landowners in Northern Michigan

FARM forests and other small forest properties have long been recognized as a major problem area in American forestry. Small forest holdings of less than 500 acres in size number at least four million and aggregate 44 percent of all the commercial forest land in the United States.[1] In general, these are the most poorly managed forest lands.[2]

Many public assistance programs have been devised to improve forest conditions on these small forest properties. These programs may have broader objectives than forest improvement (increasing farmers' economic and social welfare, soil and water conservation, etc.), but our concern here is only with those aspects of public assistance programs which affect forestry.

This paper is limited to a consideration of four major programs: forestry extension, the service forestry program, Soil Conservation Districts, and the Agricultural Conservation Program. Moreover these programs are evaluated for a limited geographic area in northern Michigan.[3] The results of the study are limited by the scope of the inquiry and the restricted geographic area involved; but at least they present some tentative conclusions and offer an objective method for determining the forestry effects of major public assistance programs.

Field data used were obtained in 1954 and 1955 during the course of a study of private forest landownership and management in northern Michigan. The major report on

[1] In this small-size category, some 3 million farms contain 137 million acres of commercial forest and 1 million other properties contain 79 million acres of commercial forest. See U. S. Forest Service, *Timber Resources for America's Future, Timber Resource Review* (Preliminary Report), Washington, D. C., 1955, p. 103.

[2] *Ibid.*, p. 97.

[3] Roughly, 31 northern counties in the Lower Peninsula of Michigan. The study area will be referred to as northern Michigan throughout this article.

this study[4] describes the procedure and sampling technique in some detail. Only a few of the sampling features pertinent to the discussion of public assistance programs are outlined below.

Method of Procedure

The field sample was tied to 3,046 forested forty-acre blocks located in the study area as part of the Forest Survey conducted by the Lake States Forest Experiment Station. Township supervisors, who were canvassed by mail, were asked to list owners of these sample forties, their addresses and occupation classes. Where addresses were known, but not occupations, a supplemental questionnaire was sent to the individual landowners. The total response identified owners and their occupations for 1,556 sample forties. Based on this sample, forest area was calculated by owner-occupation classes.

From the owners of sample forties, whose names, addresses and occupations were identified, a smaller sample was selected for field interview. A total of 229 forest landowners was interviewed and allocated to occupation classes on the basis of the square root of the population in each class. Actual selections for interview were drawn at random.

An additional sample of absentee landowners living beyond travel range was drawn for mail questionnaire. The 63 usable replies to this mail canvass were analyzed separately and were used to supplement the conclusions drawn from the regular field canvass.

Forestry Extension

The forestry extension program is handled in similar fashion, and often jointly, with the agricultural extension program in most states. The land grant colleges and universities usually administer the program through county representatives who are responsible for all phases of the program in their respective counties. Technical experts from the colleges and universities are called upon by these county representatives to answer specialized questions and to conduct special meetings involving their particular subject matter field.

The techniques employed in the forestry extension program include the following: farm visits, demonstrations, meetings and conferences, workshops, field days and tours, and the use of visual and other informational materials. Probably the most important technique the extension foresters use involves demonstrations. Forestry demonstrations have been conducted on more than 20 different phases of forestry. The use of visual materials such as bulletins and motion pictures is also important.

During the two years immediately preceding this study, 1952 and 1953, the Cooperative Extension Service in Michigan engaged in 11 different types of technical forestry activities within the study area. These included forest tree planting, Christmas tree planting, windbreak and shelterbelt planting, sugar bush management, woodland management, 4-H Club and school-forest planting and management, timber estimating and marketing, use of home-grown lumber, preservative treatment of wood, farm and home planning, and street and shade tree work. Extension specialists in forestry spent 83 man-days in 1952 and 90 man-days in 1953 working in the study area.

Landowners' knowledge and use of extension aid in general is much more extensive than knowledge and use of forestry extension aid in particular. Landowners holding 45 percent of the forest land in northern Michigan at the time of this study had previously requested some aid from their county agricultural agents (now called county extension directors). Holders of an additional 30 percent of the forest land knew of the availability of agricultural extension aid but never applied for it. The more restricted acquaintance with and use made of forestry extension in northern Michigan is indicated in the following figures:

	Percent of Forest Owners	*Percent of Forest Area*
Owners did not know forestry extension aid was available	82	51
Owners knew of availability of forestry extension aid but did not apply for it	13	33
Owners had made use of forestry extension aid	5	16
TOTAL	100	100

Absentee owners responding to the mail questionnaire showed more familiarity with the forestry extension program and made greater use of it. Owners of nearly half the

[4] James G. Yoho, Lee M. James and Dean N. Quinney, *Private Forest Landownership and Management in the Northern Half of Michigan's Lower Peninsula*, Michigan Agricultural Experiment Station Technical Bulletin 261, East Lansing, 1957.

TABLE I—ATTITUDES OF FOREST LANDOWNERS IN NORTHERN MICHIGAN TOWARD FORESTRY EXTENSION AIDS

Owner's Attitude	*Percent of Forest Area*
Owners who did not know aid was available:	
Showed no interest	24
Showed slight interest	23
Showed strong interest	4
Owners who knew of availability of aid but never used it:	
Felt it too difficult to obtain	9
Did not think anything could be gained from it	17
Planned to ask for aid in the future	3
Considered forestry extension valuable but employed or had technical ability themselves	1
Considered forestry extension valuable but used S.C.S. or farm forester advice	3
Owners who had made use of forestry extension aid:	
Doubted technical soundness of advice	0
Believed advice technically sound but not practical	1
Believed advice good but could not afford to follow it	3
Had followed advice but considered it unsound	0
Had followed advice and were uncertain of its soundness	[1]
Had followed advice and considered it sound	12
TOTAL	100

[1] Less than 0.5 percent.

forest land held by the absentee group had made use of forestry extension aid (in contrast to 16 percent by interviewed owners). This might puzzle an analyst, particularly since there were no farmers among the mail respondents. However, many findings of the study suggest that the absentee owners are better informed than resident owners about the aids available to them and make fuller use of these aids.

Attitudes toward forestry extension assistance are detailed in Table I. The most significant fact uncovered is that about four-fifths of the landowners who had applied for forestry extension aid followed the advice given and considered it sound. This represents a remarkably high degree of acceptance.

Among the many owners who knew nothing about the existence of forestry extension aids (82 percent of the owners holding 51 percent of the forest land), only a small portion evidenced strong interest in extension aids. However, slight interest may, with small stimulus, be converted to strong interest. Moreover, lack of interest is often linked to lack of knowledge. To stimulate interest in forestry assistance it is necessary first to create awareness that a need for such assistance exists.

Some indication of the possible truth of the latter relationship is reflected in Table II where owners' concepts of forest management[5] are compared with owners' use of forestry extension aid. Forest landowners with higher concepts of forest management have a greater knowledge of the program and make greater use of the forestry extension assistance available. This is an interesting relationship although cause and effect cannot be inferred necessarily. It might be concluded, with equal validity, that as landowners make greater use of forestry extension services, their understanding of forestry improves.

Service Forestry Program

One of the most important of the grass-roots forestry programs offering technical on-the-ground assistance to forest landowners is that offered under the Cooperative Forest Management Act of 1950 (64 Stat. 473).

The Clarke-McNary Act of 1924 set the stage for state and federal cooperation in providing forestry assistance to private landowners. The Norris-Doxey Act of 1937 provided for actual on-the-ground assistance in forestry to farmers. Provision was made for public assistance in tree planting, farm forestry extension work, farm forestry research, and service assistance in forest management.[6] Work under the Norris-Doxey Act was restricted to farmers and actually began in 1940. It was concentrated on a few intensively operated demonstrations.

The Cooperative Forest Management Act became effective in 1951 and repealed the Norris-Doxey Act as of that date. It extended forest management assistance to all private forestland supervisors. No limit as to size of ownership was stipulated but services have not been extended to large owners. The foresters providing the actual on-the-ground service are called "service foresters."

Michigan participates in the program. In 1951, eight service foresters were employed in Michigan but all of them were located in the southern farming portion of the state. In northern Michigan the district foresters of the state Division of Forestry perform all

[5] Concepts of forest management are not intended to be interpreted literally. They are grouped and arranged to indicate a general progression in the understanding of what constitutes timber management from "no idea" to the highest concept of sustained-yield forestry.

[6] U. S. Forest Service, *Administrative Procedures for Cooperative Forest Mangement Act of 1950*, Division of Cooperative Forest Management, Washington, D. C., 1951.

TABLE II—FOREST LANDOWNERS' CONCEPTS OF TIMBER MANAGEMENT IN NORTHERN MICHIGAN BY KNOWLEDGE AND USE MADE OF FORESTRY EXTENSION ASSISTANCE

Concept of Management	Owners' Knowledge and Use Made of Extension Percent of forest area		
	Did Not Know of Forestry Extension	Knew about but Never Used Forestry Extension	Had Made Use of Forestry Extension
No idea	7	0	6
Fire protection or reforestation and/or refraining from cutting	46	29	7
Light cutting and other measures for public good, at some personal sacrifice	23	22	7
Light cutting and other measures economically desirable in the long run, but not at present	14	24	10
Light cutting economically desirable both in the present and long run	8	23	31
Fire protection and light cutting, economically desirable both in the present and long run	2	2	6
High, continuing yield of timber products	0	0	32
TOTAL	100	100	100

of the functions of service foresters upon request. The major duties of these foresters and their assistants, however, are to administer the state-owned forests in their respective districts.

The eleven district foresters in northern Michigan spent, on the average, 8.8 percent of their time on the service forestry program.[7] In two districts the foresters spent over 27 percent of their time on the program; in six districts, less than 5 percent. This is a modest effort when weighed against the demands for on-the-ground assistance, but it must be examined in view of the primary demands on the district foresters' time to administer the extensive state forest areas.

The limited knowledge and use made by forest landowners of the service forestry program in northern Michigan is illustrated in the following statistics:

	Percent of Forest Owners	*Percent of Forest Area*
Owners did not know on-the ground assistance was available	97	83
Owners knew about the availability of assistance, qualified, but did not apply for it	2	8
Owners had made use of on-the-ground assistance	1	9
TOTAL	100	100

[7] From the files of the Division of Forestry, Michigan Department of Conservation, Lansing.

The lack of knowledge about the program among all classes of forest landowners is impressive. However, it is apparent that large landholders are better informed and make greater use of the service forestry program than small owners.

Again, as in the case of forestry extension, absentee landowners responding to the mail questionnaire showed a strikingly greater degree of familiarity with the program and made much greater use of it.

Attitudes toward the service forestry program are detailed in Table III. The outstanding statistics in this table relate to the greater preponderance of forest landowners who did not know about the availability of on-the-ground technical assistance. The majority of landowners in this group showed some interest in the program and many of them evidenced strong interest. The fact that a large number of landowners exhibited no interest should be interpreted with caution. Conservatism in response to a new idea is commonplace. Attitudes could change after additional contacts with the idea and the program which embodies it. Moreover, as was pointed out in the discussion of the forestry extension program, lack of interest in an assistance program is often tied to lack of knowledge. Awareness of the need for

TABLE III—ATTITUDES OF FOREST LANDOWNERS IN NORTHERN MICHIGAN TOWARD SERVICE FORESTRY ASSISTANCE

Owners' Attitudes	*Percent of Forest Area*
Owners who did not know assistance was available:	
Showed no interest	22
Showed slight interest	48
Showed strong interest	13
Owners who knew assistance was available, qualified for it, but never applied:	
Felt it too difficult to obtain	[1]
Did not think anything could be gained from it	3
Planned to ask for aid in the future	3
Considered service forestry valuable but employed or had technical ability themselves	1
Considered service forestry valuable but used extension forestry or S. C. S.	1
Owners who had made use of assistance offered by service foresters:	
Doubted technical soundness of the advice	0
Believed advice technically sound but not practical	6
Believed advice good but could not afford to follow it	[1]
Had followed advice but considered it unsound	0
Had followed advice and were uncertain of its soundness	1
Had followed advice and considered it sound	2
TOTAL	100

[1] Less than 0.5 percent.

assistance must precede an active interest in obtaining assistance.

The reaction of landowners who had obtained on-the-ground technical assistance was not as favorable as in the case of landowners who sought extension forestry aid. Where service foresters had provided assistance, most owners believed the assistance rendered was technically sound but impractical. This unexpected reaction probably indicates an inadequate grasp by landowners of the forestry principles involved but it also suggests that the conventional approaches used by technical foresters may need to be altered to better fit the needs of small forest landowners.

Again, the response of absentee landowners replying by mail was strikingly different from that of owners interviewed in the field. Owners of more than half the forest land held by the absentee owners indicated they had made use of the assistance offered by service foresters. Moreover, most of these landowners followed the advice given and considered it sound.

A comparison of owners' concepts of timber management with their knowledge and use made of the service forestry program shows a strong correlation. Forest landowners with higher concepts of forest management have a greater knowledge of the program and make more use of the service forestry assistance available. Again, cause and effect are suggested but cannot be definitely established. Well informed forest landowners are more likely to know about and make use of the service forestry program than are poorly informed owners; but, in the process of exposing themselves to on-the-ground forestry assistance, the well informed owners are likely to continue to develop their forestry concepts.

Soil Conservation Districts

The Soil Conservation Service has been assigned the job of cooperating with the soil conservation districts and assisting landholders to establish conservation measures on their lands. Woodlands have a place among the measures recommended. Those landowners and occupants who accept plans proposed for them by the Soil Conservation Service are known as "cooperators." The cooperators are encouraged to: (1) protect woodland from fire and grazing; (2) manage woodlands conservatively and cut timber annually; (3) plant trees on land best suited for woodland.

The soil conservation district program is not limited by law to farmers' lands but to date most of the work has been concentrated on the farmer group of landholders. The emphasis in the program has been on an all-inclusive farm land-use plan. This plan is usually based on the capabilities of the soil with much attention given to the limiting role of soil's susceptibility to erosion. Land considered as overly susceptible to erosion even for grassland use is usually recommended for forest use only.

The Michigan Soil Conservation District Act was passed in 1937. Since that date the formation of districts in northern Michigan has proceeded slowly. Six counties in the study area were still without organized soil conservation districts in 1954. Five counties were organized from 1946 to 1949; six counties were organized from 1950 to 1953. At the time this study was made more than half of the eligible forest land in the study area was either outside of organized districts or was only slightly exposed to the Soil Conservation Service program.

Forestry measures under the Soil Conservation Service program in Michigan have emphasized tree planting. By the end of 1952 cooperators had planted 62,683 acres of land to trees. Most of the planting efforts went into the reforestation of abandoned fields. Some land (892 acres) was planted as farm windbreaks. Sixteen of the soil conservation districts maintained tree nurseries in 1952, turning out some 3½ million trees in that year. By the end of 1952, cooperators had also brought 73,275 acres of woodland into the program for improved timber management practices. However, recommendations for these woodlands were not necessarily translated into action.

More than half the farm forest land in northern Michigan is held by farmers who had become Soil Conservation Service cooperators. These farmers all had Soil Conservation Service plans prepared for them at one time or another during their period of tenure.

Cooperators with woodland were questioned about the importance attached to their woodlands in the general farm plan. Their attitudes could be summarized as follows:

	Percent of Forest Area
Farmers did not think woodland had a significant place in the farm plan	32
Farmers thought woodland had a minor place in the farm plan	61
Farmers thought woodland had an important place in the farm plan	7
TOTAL	100

At least in the minds of the cooperators themselves, the farm plans did not give much attention to existing woodlands. It is likely that the Soil Conservation Service farm planners had intended to place more emphasis on woodlands but had not succeeded in transmitting this intention to the farmer landholders.

Cooperators who had adopted forestry practices as a result of recommendations by farm planners were asked to name the adopted practices. Only two practices, forest plantations and windbreak plantings, were named. Significantly, not one cooperator stated that improvement cuttings in existing woodlands had been adopted as a result of his farm plan. Many such recommendations had undoubtedly been made, but perhaps the forest management recommendations were overshadowed by other recommendations in the plans.

Agricultural Conservation Program

Beginning in 1936 Congress authorized the Agricultural Conservation Program (ACP), a program of soil-building and water-conserving practices. As the act was interpreted, its primary objective became the protection of the public's interest in the nation's soil and water resources. This objective was to be achieved through a system of cost-sharing between government and the individual farm owner. The practices encouraged are considered to be of benefit to the farmer, but cost-sharing is justified on the basis of benefits gained by society.

The United States Forest Service is responsible for the technical phases of the forestry practices finally approved by the county committees. Its responsibility includes assistance in developing specifications for approved practices at the state and county levels as well as checking farmers' compliance with approved practices at the county level. Actual work on-the-ground is the farmer's responsibility.

Although forestry has been a part of ACP from the beginning, its part in the total program has been small. Forestry practices accounted for less than one percent of the payments made over a 10-year period.[8] Payments to the nation's farmers for approved forestry practices (mostly for tree planting on some 80,000 acres) amounted to about $1,000,000 in 1953.

Table IV is a record of ACP forestry accomplishments and payments in northern Michigan from 1950 to 1953. During this period, approval was not given for any forest improvement work. Tree planting (including windbreak planting) was the only approved forestry practice in 1950 and 1951. Fencing was also approved in a few counties in 1952 and 1953. The maximum federal cost-share for tree planting was set at $1.00 per hundred trees in plantations, $1.50 per hundred trees in windbreaks. Actual payments per acre varied widely by counties. The maximum federal cost-share for fencing was 75 cents per rod. During the four-year period the average annual number of northern Michigan farms participating in the tree-planting phase of the program was about

[8] M. B. Dickerman, *Forestry assistance programs, Timber Resources Review* (preliminary report), Chapter IV, Section F, United States Forest Service, Washington D. C., 1955.

TABLE IV—ACP Forestry Accomplishments and Payments in Northern Michigan, 1950-53[1]

ACP Record	Year			
	1950	1951	1952	1953
Tree planting:				
Number of counties participating[2]	27	29	30	29
Number of farms participating	1,091	1,357	1,632	1,109
Number of acres on which payment was made	2,974	5,257	5,243	3,987
Average credit per acre allowed for activity	$8.83	$8.84	$9.31	$10.31
Total amount paid	$26,262	$46,489	$48,832	$41,111
Fencing woodlands:				
Number of counties participating	[3]	[3]	8	4
Number of farms participating			15	14
Number of rods on which payment was made			1,051[4]	964
Average credit per rod allowed for activity			$0.40	$0.75
Total amount paid			$420	$723

[1] From the Michigan ASC Committee, Lansing.
[2] Does not include counties where money was available but not spent. To have included such counties would have added three counties in 1950, two in 1951, and one in 1952 and 1953.
[3] No funds were allocated for fencing by the State Committee until 1952.
[4] For protection of 188 acres in 1952.

1,300; the average annual number of acres involved was 4,365; the average number of planted acres per participating farm was 3.36; and the average payment per farm was slightly over $31.

A remarkably small percentage of the interviewed farmers knew about the availability of ACP forestry payments. Even among farmers who received ACP payments for other conservation practices, many had no knowledge of qualifying forestry practices. However, of those farmers who knew about approved forestry practices and qualified for them, a large majority took the opportunity to apply for forestry payments. Large forest landowners, in particular, took advantage of the opportunities. These observations are supported by the following statistics:

	Percent of Farm Forest Owners	*Percent of Farm Forest Area*
Farmers did not know about the availability of ACP payments for forestry practices	90	59
Farmers knew about ACP payments for forestry practices, qualified, but never applied	3	4
Farmers had applied for ACP forestry payments	7	37
Total	100	100

Attitudes toward ACP payments for approved forestry practices can be summarized briefly. The farmers holding 37 percent of the farm woodland who applied for ACP forestry payments divided almost evenly between those who stated they would have undertaken their forestry projects regardless of the ACP program and those who stated they would not have undertaken the project without the incentive of ACP payments. This indicates a strong effect of ACP payments in stimulating forestry practices (at least the limited practices which qualified for payments when the field study was made), particularly in view of the reluctance of many individuals to admit a lack of financial independence. Farmers holding 4 percent of the farm woodland knew about ACP forestry payments, qualified, but never applied. Only one explanation was given by this group for not applying for payments: they believed the trouble of application outweighed the value of the payments involved.

Farmers holding about 60 percent of the farm woodland did not know about the availability of ACP payments for forestry practices. Many of them showed an interest in the possibility of obtaining payments for

forestry practices but indicated their practices would be unchanged. They would have the same plans for planting and fencing, with or without payments. Most of the farmers who did not know about the program did not indicate any interest in forestry payments. However, it is appropriate to question whether as much weight should be attached to the expressed attitudes of persons who heard about the program for the first time as to the attitudes of those who knew about the program and who had applied for payments. The observation expressed several times previously about conservatism in attitudes toward new ideas applies here also. Attitudes might change after additional contacts with and thinking about a new idea.

Conclusion

Many public assistance programs have been devised to improve forest conditions on small properties. Four major programs have been considered in this paper—forestry extension, the service forestry program, Soil Conservation Districts, and the Agricultural Conservation Program. Objectives of at least two of the programs take in aspects outside the field of forestry, but only the forestry aspects of the programs have been considered. Moreover, the tentative conclusions that have been offered apply only to a 31-county area in northern Michigan. Conclusions have been based on data collected mainly in 1954 and 1955 during a field study of private forest landownership and management.

An attempt has been made to measure some of the forestry impact of the four public assistance programs on small forest landowners. In all instances, one is impressed both by the limited extent of the efforts made and the limited effects. Probably the most successful of the programs in relation to the cost involved has been forestry extension. Most of the landowners who applied for advice followed the advice given and considered it sound. ACP payments have apparently been instrumental in persuading farmers holding 18 percent of the farm woodland to plant trees or fence woodland, but no attention was given at the time of this study to improvement cuttings in existing woodlands. The service forestry program achieved its greatest success with absentee landowners; in the case of resident forest owners most of those who obtained assistance believed the advice received was sound but impractical. Soil Conservation Service farm plans included farm woodlands in the overall farm plans but only a small percentage of farm cooperators thought that woodlands had an important place in their farm plans. Some cooperators established tree plantations or windbreak plantings as a result of SCS farm plans but none of those interviewed stated that improvement cuttings were initiated because of recommendations in the plans.

In view of the limited effort put into them, limited effects from the assistance programs would appear to be inevitable. For example, forestry extension specialists could devote only about 90 man-days a year to the study area and 11 district foresters could assign only 9 percent of their work loads to service forestry.

The lack of knowledge about the assistance programs is striking. The existence of a forestry extension program was unknown to 82 percent of the forest landowners in the field. Ninety-seven percent of the owners did not know anything about the service forestry program. Ninety percent of the farmers were unaware that payments for forestry practices where available under the Agricultural Conservation Program.

This study indicates some areas of weakness in all of the programs of public forestry assistance evaluated. Of greater importance than the tentative conclusions presented is the implied need to study these programs in greater depth and over larger geographic areas. The total effort and expenditure of public assistance programs directed at small forest landholders appear destined to increase. In view of this trend, a more objective basis for allocation of funds and energies is needed than is provided by past approaches to public assistance programs.

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Measurement of Recreation Benefits: A Reply†

THE ARTICLE by A. H. Trice and S. E. Wood, "Measurement of Recreation Benefits," which appeared in the August 1948 issue of *Land Economics*, considers problems of economic evaluation of the worth of public investment that are by no means limited to recreational activities. Messrs. Trice and Wood have performed an important service in analyzing the difficulties that are more or less generally present in the use of benefit-cost analysis and that are of particular significance in the case of "intangible" recreational benefits.

In cases where it might be possible to express *all* benefits of private and public investment in equivalent monetary terms, a simple numerical accounting would be sufficient to determine whether public investment is economically feasible in terms of the private market standard. Aside from the rarity of such cases, a false impression of precision and comprehensiveness follows from the emphasis upon the b/c ratio, which is at best a simple numerical summation of the measurable features of project evaluation. To ignore values because they are difficult to measure is to exclude from consideration important welfare features of many public investment programs. The benefits to the individual and the community from improved health and well-being, enhanced recreational opportunities, and the generally more abundant social services that flow from public investment can be only partially appraised through the use of market data. Many benefits are likely to be dismissed as "intangible" and left out of the quantitative evaluation of the worth of public investment even though such intangibles may enhance the income of society.

Trice and Wood are aware of the worth of intangible benefits but appear to misinterpret the consequence of the non-material character of some public investment benefits. "Primary benefits from recreation," they contend, "are personal and varied and, therefore, not readily measurable in dollar terms." (p. 197) Actually, all benefits (consumer satisfactions) are "personal and varied," whether the commodity or service is sold in the market economy or available without price from another agency. One of the most noteworthy accomplishments of the market process is the establishment of a single price for items that afford varied satisfactions to different individuals.[1] Tangibility of benefits or satisfactions—if, indeed such were possible—is in no way a prerequisite to market appraisal. In the absence of market-derived valuations, however, the measurement of public investment benefits must be based on a substitute consensus of the "personal and varied" evaluations or an indirect gauge of the nature and extent of such benefits.

For the most part, past attempts to demonstrate the economic worth of public investments that yield so-called intangible benefits have been based upon market expressions of indirect economic indicators. An early study of the economic effects of water pollution by Professors Vaile and Black[2] illustrates the

† I am indebted to Professors M. O. Clement and T. J. Finn, Jr., for suggestions in the preparation of this note.

[1] "Tangibility" and "intangibility" of benefits may be distinguished meaningfully only upon the basis of whether a price designation or other form of rank ordering may be assigned to consumer satisfaction. Intrinsically, all consumer satisfactions derive from tangible situations or objects, things that can be perceived—such as an aesthetically-pleasing view, a loaf of bread, absence of noise, a well-played concerto—but the conditions necessary for measurement and economic evaluation may not be equally present in all cases.

In speaking of testimony before the Kerr Committee investigating the suitability of assigning a monetary value for visitor-days at certain Federal reservoir areas, Trice and Wood say that "testimony revealed that failure properly to estimate recreational potentials of reservoir projects had led to dangerous overcrowding with, in many cases, recreational use in the first year far exceeding facilities provided." (p. 196) An ardent advocate of price-system planning might with some justification suggest that the solution to *both* the problem of benefit measurement and the problem of overcrowding might be achieved by charging a price for the use of the recreational facilities. This would provide a partial indication of whether the "dangerous overcrowding" was the result of high consumer valuation or free recreational opportunities. Although use alone is an indication of some level of public benefit, additional information is required to establish the magnitude of the benefit.

[2] R. S. Vaile and A. G. Black, "Some Economic Effects of Pollution of the Mississippi River, Minneapolis to LaCrosse Inclusive," *Report of the Minnesota Board of Health* (St. Paul, 1928).

A recent study of R. F. Wallace, *Economic Aspects of Wildlife Resources of the State of Washington* Bureau of Economic and Business Research Bulletin No. 19, Pullman, February 1952, is unusually explicit in the endorsement of the value framework of the private market economy as a standard for appraising the economic benefits to individuals and the community of wildlife resources. Although Wallace compiles data on the value of wildlife from expenditures for hunting and fishing licenses, transportation, sporting equipment, and the like, in assessing the worth of wildlife no attempt is

(Continued on page 366)

dilemma of this approach— a dilemma that is inherent in a methodology that relies almost solely upon either direct or indirect expressions of the private market as a standard of value. The Introduction of the Vaile and Black report describes this problem:

> Pollution in many ways has an effect upon the wealth of any community, and therefore the economic phases of the problem cannot be ignored. Some of these, such as the depreciation of property values, loss to the commercial fishing and clamming industry, etc., can be estimated within reasonable limits, and even roughly measured in dollars and cents.
>
> It is difficult to measure in money values the effect of pollution from an aesthetic standpoint . . . . The aesthetic side of this problem, while it cannot be accurately measured by any known yardstick, should, nevertheless, be given weight in formulating any plan or program of remedial measures.[3]

No conceptual difficulty is experienced in the use of the orthodox method of analysis for such studies so long as a market expression of the worth of the destroyed or impaired resources—such as fish or clams—is available. For the so-called intangible benefits (or losses), however, a more difficult problem arises. In most studies the recreational value of a stream is accorded an economic worth based upon the expenditures necessary to enjoy the resource—not upon an appraisal of the value of resource uses. Trice and Wood have persuasively pointed out the hazards of the gross expenditures approach (pp. 199-200) but may have overstated the case against this procedure and adopted a variant of this approach that is equally objectionable. The value of a resource and the satisfactions derived from its employment may correspond closely or widely to the aggregate expenditures incurred in the use of the resource.

The problem of analysis that confronts the economist is similar to an attempt to appraise the value of theater or night-club entertainment without knowledge of the expenditures for theater tickets or the fees for night-club cover charge and outlays for food and drink. The costs of transportation to the theater, a proportionate allocation of expenditure for special dress, and other purchases unique to the particular activity may be relevant to evaluation but these data are no substitute for knowledge of the price of the theater tickets. Even the most comprehensive accounting of ancillary expenditures for one kind of resource use does not afford a basis for generalizing with respect to other kinds of resource use. In some cases ancillary expenditures may be trivial compared with the worth of the ultimate recreational objective, large in other instances, while in either case such outlays may not be strictly allocable to a single recreational experience. This approach is of limited use because it affords neither a reliable index nor an accurate gauge of the value of the primary object of of the expenditures.

The Trice-Wood "costs of travel" index for measuring recreational benefits, although avoiding the "aggregate" expenditure approach, is subject to similar qualifications as well as special criticism. Trice and Wood assume that recreational benefits from public investment are commensurate with the highest travel cost (longest distance) incurred by park visitors. This travel cost figure is then assigned as a benefit for all visitors, irrespective of the actual cost involved. In support of this procedure it is claimed that "using costs of travel alone avoids such questions as economic ability, personal tastes and appetites, and forms of recreation enjoyed. The assumption of a fixed cost per mile traveled has, therefore, the dual advantage of removing income differences and at the same time producing per visitor day differences in costs of enjoying a recreational area." (p. 203) Although it is true that the "costs of travel" index avoids questions of income difference, taste, and object of travel expenditures, such considerations cannot properly be ignored in the determination of public policy. It is not correct, however, to maintain that the index "removes" income differences. Not only does the "cost of travel" index overemphasize an indirect

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(Continued from page 365)

made to express or measure extra-market values. Wildlife is viewed as an income-producing resource largely in terms of expenditures that are a consequence of such activities as hunting and fishing. The evaluation of the worth of wildlife resources is based squarely upon market measures. Indeed, it is stated in the Introduction that ". . . . the relative importance of various goods and services to society can be measured only by the relative expenditure which the members of society are willing to make in order to obtain them." *Ibid.*, pp. 1,2.

[3] *Op. cit.*, p. 123.

and possibly inaccurate[4] measure of recreational worth but "income," "taste," and "objective of expenditure" are inherent in these data. Market data are significant for public investment evaluation primarily when interpreted against the background of prevailing income distribution and consumer tastes. The "costs of travel" index is a segment of market data and subject to the same qualifications as more comprehensive expressions of consumer demand. It is important to know whether the more distant travelers, who in the Trice-Wood index establish the value of the recreational benefit, are made up of above-average income receivers as compared with visitors from closer areas. By avoiding the consideration of the influence of income and taste, information pertinent to the design, size, and location of recreational facilities may be disregarded.

Following Professor Hotelling's "concentric travel cost zones,"[5] Trice and Wood assign consumer's surplus to all but the most distant travelers to the recreational installation. The notion of consumer's surplus is beguiling. It has probably led more economists into error and controversy than any other small point in economic theory.[6] This deceptive doctrine requires at the least the qualification that the marginal utility of money is constant[7] and under conditions posited by Trice and Wood the additional, totally unrealistic, assumption that individual preference scales are identical. The assumptions of the zoning method of Professor Hotelling, that visitors near recreational areas enjoy the facility as much as those more distantly situated, may be true or false depending upon the nature of the facility and the individuals in question. What is needed to appraise such recreational benefits is a way to discriminate between various users and to sum up the different individual evaluations—not to assume an artificial constancy of reaction.

It is not the purpose of this note to cavil at the failure of an appraisal of the benefits of public investment to encompass the detailed prescriptions of "rigorous" theory. The pertinent question is whether a method of evaluation provides information on features of public investment that is important for public policy formulation. The great disadvantage of the "travel costs" index is that it achieves simplicity and measurability at the expense of significance and relevance.

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[4] What travel-cost allocation procedure will be followed where "touring the West" starts from an Eastern city and includes visits of numerous points of interest? Are "costs of travel" to be computed from the original starting point in each case or from the nearest previous recreational stop? Use of the former basis would undoubtedly result in over-appraising and double-counting, while the latter procedure would under-appraise many facilities.

[5] See U. S. National Park Service, *The Economics of Public Recreation* (Washington, D. C., 1949), unpaged reproduction of letter.

[6] It is interesting to note that the French engineer, Jules Dupuit, generally credited with the origination of the concept of consumer's surplus, developed this device as a means of judging the worth of public works. The controversy over the use of the consumer's surplus doctrine has engaged many of the great minds of economics, such as Walras, Edgeworth, and Marshall, sometimes in the process of re-arguing positions that had been established or rejected in previous periods. See R. W. Houghton, "A Note on the Early History of Consumer's Surplus," *Economica*, February 1958, p. 49.

[7] Through indifference curve analysis, J. R. Hicks is able to represent consumer's surplus without this qualification, but it is not necessarily identical with the familiar Marshallian graphical presentation. See *Value and Capital* (London, England: Oxford University Press, 1939), p. 39, and *A Revision of Demand Theory* (London, England: Oxford University Press, 1956), Chapters 10 and 18, especially pp. 176-9.

Measurement of Recreation Benefits: A Rejoinder†

THE authors are pleased that their article has aroused the interest of Professor Hines and he is to be commended for his excellent statement. Many of his comments are well taken. No attempt will be made to deal with every aspect of the note. Rather, an effort will be made to clarify the nature and intent of the method proposed in the study and to comment upon the alternatives suggested but not developed by Professor Hines.

Nature and Intended Use of Dollar Values. From a computational standpoint, the average value of recreational benefit is not derived in precisely the fashion stated by Professor Hines. Distance to the recreational area is only one facet of the method. Actually, those who expended the greatest amount for travel were not necessarily those who traveled the greatest distances. Cost per recreation day reflects distance traveled, days on the

trip, days in the recreation area, and number sharing expenses. Not only is the cost not based upon simple distance but the cost which establishes the "market value" of a day of recreation is not the highest, but the cost found at the 90th percentile in an array of per visitor day costs of travel. While these words of explanation do not remove the objections, it is hoped they will make the derivation for those who may wish to experiment with it.

As further clarification and as a partial answer to the claim that the measure does not have a practical use, it may be said that the dollar amount is not intended as an expression of total intangible recreational value. It is intended to be no more than a least common denominator of intangible value to recreationists in general. Descriptions in words of both individual and social values from projects are still needed. The extent to which reliance must depend on general (often vague) justifications is reduced, but not eliminated.

Further, the $2 per man-day value is not intended as a suggested charge for recreational use. Aside from any practical problems of administering a program of payment by recreationists for recreational use of specific projects or project areas, it is probable that a portion of the estimated value would not find expression in actual purchase of recreational use, since many persons might be unwilling or unable to pay the full amount. In an array of demands those below the average would be precluded from use of the recreational area even though such use would have value to them. This inability or unwillingness to pay the full estimated amount indicates that the $2 per man-day is not a market price representative of effective demand; but it is a measure which includes intangible, non-economic values which are beyond the payment capacity of many users.

The $2 per man-day value is not used in selecting appropriate recreational development. Its sole purpose is to give a tangible dollar expression to the value of recreational features of projects to the citizens of the state. The basic question is not what facilities shall be provided, their number, and in what proportions, and so forth, but how much net recreation dollar benefits can be *reasonably* expected from water development projects which have recreation potentiality. Of course, estimates of the number of recreation man-days of use during the pay-out period must be made. The man-day estimates must be based upon physical design considerations and a reasonable measure of recreation demand and use.

There can be no doubt that the benefit-cost method places emphasis upon accounting. The difficulty of relating intangible recreational values to accounting dollars secured from sales of water for power development and for irrigation is great. No doubt a full comparison is not possible. The measure proposed in the subject article is an intermediate step between no dollar value of recreation and full dollar value. Ultimate or full dollar value of recreation is impossible to determine and no dollar value leaves too great a gulf to bridge between values which lend themselves to dollars and those which do not. A least common denominator determined by travel costs is a compromise. It gets current methods off dead center without, it is hoped, going too far into a wilderness of differing tastes, economic status, and specific expenditure objectives.

Proposed Alternatives. Professor Hines proposes as alternatives the compiling of information as to details of expenditure and as to the values of recreation. Emphasis is placed upon getting the facts from those engaging in recreation or from the public at large. Undoubtedly additional material of this type should be secured and analyzed. Limitations of time and budget ruled out this approach in the study which gave rise to the method devised. Aside from limitations of time and budget, both susceptible of removal, there are other problems of a practical nature which must be faced in the gathering of such data. Actually the same difficulties are encountered in almost any investigation and need not be considered peculiar to the current problem or to recreation as such. That they exist does serve to point up the extreme difficulty of proposing a fool-proof method of achieving what may be an impossible end.

Difficulties of the direct approach include problems of sample size, selection of persons to be interviewed, preparation of questionnaire forms, selection and training of interviewers, overseeing the conduct of the interviews, editing questionnaires, compiling statistics, and analyzing results. At any stage of such an investigation there may be intentional or unintentional information. Respondents may not know or may not wish to divulge necessary information. Inter-

viewers may unconsciously influence answers and the questions may be such that the interviewees are confused. Editing, compiling, and analysis all are subject to error too. Not only is the process fraught with problems but after it has been completed there are still questions as to the significance of the findings for any specific project or projects.

The travel costs index has been proposed as a method for measuring recreational benefits under specific circumstances. The dollar amount will vary from project to project. The method is open to further consideration and probable refinement. It is hoped that others may become interested to the extent of devising still more acceptable methods. Perhaps in time sharper tools of analysis than now exist will be supplied to those charged with the responsibility for determining feasibility of water projects. If this should happen the original article will have served to stimulate interest in a neglected field. Comments and criticisms such as have been made by Professor Hines are welcomed. There is certainly no monopoly on benefit-cost analysis and the travel costs index is neither the first nor the last word by any means.

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Measurement of Recreation Benefits: A Reply

MEASUREMENT of intangible benefits where no market exists has long been both a challenge and a plague to economists. Without a market the economist is fighting without his glasses. Trice and Wood have fully recognized the difficulties involved in their interesting attempt to measure recreation benefits. However, there may still be some serious questions to be considered before their proposal is put into practice.

The authors cite Professors Howard Ellis and Harold Hotelling as their basic inspiration in using consumers' surplus calculations to measure recreation benefits. Hotelling is also cited as providing a travel-distance rationale. (p. 198) Roughly speaking, this rationale is as follows: All users of a park are assumed to be willing to pay for the use of a park as much (per visitor day) as the travel costs of the relatively high cost users. The latter are determined by a bulk-line method. Suppose the bulk-line is set at 90 percent. Further, suppose the 10 percent of users who pay highest travel costs are found to pay at least $3.00 a visitor day to use a park. Suppose that some average travel cost (median, mode, mean) for the remaining 90 percent is $1.00 a day. Then, if there are 1,000,000 people-days constituting the 90 percent, the recreation benefits are computed as ($3.00—$1.00) times $1,000,000 or $2,000,000.

Is it generally true that those who are "able to enjoy the parks without incurring the full travel expense of the most distant travelers" obtain a consumers' suplus? (p. 198) This assumption implies that the only significant difference between those far and those close to a park is the distance to the park. However, those who live close to a regional recreational area, as the Upper Feather River area, may often be relatively isolated from central metropolitan areas. On the other hand, those who live far from a regional recreation area often tend to be those living in metropolitan areas. This is no chance occurrence which may "wash out" on the average. It is built-in. As a consequence, those close to regional parks make long trips to "come to town." Those who are close to urban centers make long trips to enjoy recreation.

Location close to regional parks or close to metropolitan centers may either be voluntary or involuntary. If voluntary then there is an economic substitution of one type of accessibility for the other. That is, the decision to live close to the park area is at the same time a decision to forego some of the benefits of urban accessibility. In this case it is clear that the proposed method would not work. Those who have purchased closeness to regional parks at the cost of urban accessibility would not be willing to pay additional amounts equal to the travel costs of the high cost users.

Suppose 10 percent of all the workers in a certain metropolitan area pay $30 or more per month for transportation to the center. The remaining 90 percent, or say 100,000 workers pay an average of $10 a month. Then the consumers' surplus according to the Trice-Wood-Hotelling formula would be 100,000 times $20 or $2,000,000 a month. Presumably, the public could tax away this $2,00,000 a month without disturbing any locational decisions. But the 90 percent are already paying for their superior location through higher rent for similar accommodations, or the same rent for smaller accommodations. The 10 percent who commute sacrifice the $20 a month differential for home ownership, better accommodations, suburban living, and many other reasons. If the public attempted to collect the presumed consumers' surplus in this case there would be an additional centrifugal push exerted on the metropolitan population. The consumers' surplus is already absorbed by market action. The public cannot collect it again.

Is there greater validity to the proposed method where locational decisions are presumed to be involuntary? In this case, determinants of location may be primarily vocational rather than distance to metropolitan centers or regional parks. However, the objection would still seem to apply. Whatever the reason for their location, those close to the park are forced to substitute recreational accessibility for "urban" accessibility. The reason they may use the park as much as they do depends on its low cost of accessibility. Suppose the price of admittance were raised differentially so that everyone's price equalled the travel cost of the high cost users. Those who are close in effect are now forced to make distant trips to both parks *and* urban centers. Since park trips become more expensive in terms of urban trips, the former would tend to be cut down. Therefore, benefits measured by the proposed consumer surplus method would tend to be too high. From a somewhat different point of view, benefits are overestimated because they represent a gross concept. To determine a net benefit, the consumers' surplus derived by metropolitan dwellers from their "urban" accessibility should be subtracted from the presumed recreational accessibility. Since the urban surplus is likely to be greater, the net recreation benefits measured this way may even be negative.

The authors indicate that the bulk of trips (presumably 90 percent) to and from the Sierra Nevada Recreation area average 500 miles or less. (p. 204). This means that the most distant users considered are about 250 miles away. It seems likely that the San Francisco-Oakland Metropolitan Area, which is about 250 miles from the center of Plumas County, contributes the largest part of the bulk-line users. Thus, in the case at hand, it is likely that the distant users do, in fact, obtain the benefits of high accessibility to a metropolitan center while the close users are more remote from metropolitan services. The one important exception to this generalization is the location of the Sacramento metropolitan area relatively close to the recreation area. It is still true, however, that urban opportunities for the potential users of the Plumas recreation area tend to increase with increasing proximity to San Francisco-Oakland.

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Book Reviews

The Life and Times of Baron Haussmann: Paris in the Second Empire. By J. M. and Brian Chapman. London: Weidenfeld and Nicolson, 1957, pp. ix, 262. 25 s. In the United States from The Macmillan Co., $5.00.

Napoleon III and the Rebuilding of Paris. By David H. Pinckney. The Princeton University Press, 1958, pp. ix, 245. $6.00.

In one of his lectures at Harvard nearly twenty years ago Siegfried Giedion gave a brief but vivid picture of one of the most amazing episodes of city rebuilding in Western history, the transformation of Paris by Haussmann under Napoleon III between 1853 and 1870. (*Space, Time and Architecture*, part VII.) Now the American reader interested in city planning is offered two full-length accounts of this exciting story.

Brian Chapman, lecturer in political science at Manchester University, is a leading British student of French local government; his wife has been a lecturer in economics at Manchester. They offer a "biography of an ebullient, ruthless and highly intelligent prefect of France, whose career led him . . . . to supreme power in Paris during the Second Empire." They "decline to . . . . assess his work in terms of [current] . . . . English . . . . doctrines of town-planning."

Theirs is a lively, sprightly story of the administration of planning by a man who described himself as "a democrat, and very liberal, but none the less authoritarian." Twenty years as a prefect in the provinces had taught him the intimate relations of administration and politics. He knew the importance of a quick success, so that he executed with vigor Napoleon's dream of converting a run-down national forest into the Bois de Boulogne. "It was administratively the most successful and the least useful item of the initial programme of works." (p. 89) He also knew how to get funds for sewers, which had no political appeal and bored the Emperor; he knew how to bury a scheme that would arouse opposition in a larger proposal (p. 46). "In other words, projects of this order amounted to a series of problems in human relations." (p. 105) Need one name the current American public figure with whom Haussmann courts comparison at every turn?

Remember that Paris already had 1,200,000 inhabitants when Haussmann began his work. In five years the suburbs grew 61 percent, the central city only 11 percent. It took Haussmann six years to get through a bill to annex the suburbs; unfortunately he did not succeed in his proposal to make a greenbelt 800 feet wide surrounding Paris on the site of the old fortifications which had separated Paris from the suburbs.

Among the tools that Haussmann used were setback lines (Avenue Foch), excess condemnation, architectural control by restrictive covenants (the Etoile, the Opera). The cost of the Bois du Boulogne was met largely by the sale of lots on the Neuilly side for fashionable residences.

Haussmann had the continued opposition of the Rothschilds and the Bourse because of his "inflationary" public works expenditures. The Emperor insisted that they must not entail increased taxes. Haussmann believed that in an expanding economy increased wealth would provide a broader tax base to pay for the arteries of communication, sewers, water supply, parks, without which the growth would be choked. His attempts to discount these future revenues to provide the cash for his work led to his downfall.

Professor Pinckney, head of the department of history at the University of Missouri, treats of the same events. He starts by emphasizing that "Louis Napoleon fancied himself something of an architect" (p. 25) (Haussmann exploited this interest to the full and constantly prevented criticism by wrapping the Emperor's mantle about him.) But Pinckney chooses to tell the story in a succession of chapters on streets, on buildings and parks, on water, on sewerage, in some of which Napoleon's name hardly figures, since the subjects were of little interest to the Emperor. The detailed descriptions of these

public works need the support either of an intimate knowledge of Paris or better maps. Pinckney has an excellent, systematic chapter of the forces and rate of urbanization of Paris in the mid-century: was it the coming of the railroads, or was it, as in urbanizing countries today, the search for jobs by displaced peasants that brought throngs to the city?

Pinckney calls upon Hudnut, Mumford, Tunnard to give him support for the appraisal of Napoleon and Haussmann's work which the Chapmans eschew. Both Pinckney and the Chapmans summon up the same quotations from Eugene Sue and Balzac for atmosphere; each has reproduced contemporary cartoons. Pinckney's is a systematic account of a public works program, the Chapmans' is an administrative biography—and more fun.

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Public Works and Employment from the Local Government Point of View. By Eugene C. McKean and Harold C. Taylor for W. E. Upjohn Institute for Community Research. Chicago, Illinois: Public Administration Service, 1955, pp. 274. $5.

This study investigates the relationship, in quantitative terms, between public works construction and employment. More precisely, it is an attempt to determine the employment-creating potential of an expanded public works program in a period of economic depression. As indicated by the book's sub-title, the authors are concerned mainly with formulating a public works policy geared to the needs and resources of state and local governments, with the federal government's role considered primarily in terms of its bearing on local decisions.

The widely accepted view that local governments can make a substantial contribution to economic stability by adopting a long-range policy of stabilizing their public works expenditures is rejected by the authors. Their examination of the record of public construction during the 1920-1939 decades leads them to conclude that maintenance of a constant-volume-per-capita rate of construction over this period would have had very little effect on the level of national income. In fact, the evidence presented indicates that during the critical downturn years of 1930 and 1931 the effects of such a policy would have been perverse.

The authors observe that state and local governments do well if they hold to reasonable proportions the decline in self-financed public works expenditures during periods of prolonged depression. Maintenance of regular governmental services and caring for the needy is the community's first responsibility. Embarking on an ambitious program of public works would exhaust the available funds while creating jobs for only a small proportion of the unemployed; cash and work relief, therefore, must be given priority over all but the most essential public works projects. Where feasible given this limitation, however, the authors recommend that local officials follow a build-as-needed public works policy. While this would mean abandonment of pay-as-you-go financing during periods of declining revenue, they note that current financing of capital outlays has never been very widely or continuously practised by local governments. Furthermore, they argue that, except perhaps for the panic years of 1932 and 1933, neither the default nor interest rate situation was serious enough to have prevented additional borrowing by many state and local governments during the 1930s had they so desired.

The authors recognize that any attempt to use budgetary policy to cope with a serious depression would entail deficit financing on a scale that could only be contemplated by the federal government. Their analysis leads them to conclude that, even if a federally financed public works program were pushed to its practical limits (i.e., something less than double the "boom" level), most of the unemployment problem would still have to be handled through cash or work relief. It should be noted that this and similar conclusions throughout the book fail to take into account the employment that would be generated through operation of the "multiplier" principle. The significance of this omission is indicated by the fact that most economists estimate the secondary employment resulting from operation of the multiplier to be between two and three times the number of jobs initially created by the public works expenditure.

It is probably true, as the study suggests, that an anti-depression public works program of magnitude sufficient to solve the unemployment problem of a severe depression

would not be administratively feasible. What is mainly lacking is advanced planning by all levels of government and the development of procedures for intergovernmental co-operation in the implementation of a federally financed, locally administered construction program. The authors point out that such planning, especially advanced engineering work by local governments on a "shelf" of specific projects, is likely to occur only if federal funds are provided for this purpose. In the absence of legislation along these lines, it is likely that in a future emergency as in the past we will be unable to fully exploit the anti-depression potentialities of large-scale public works construction activities.

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California Lands: Ownership, Use and Management. By Samuel T. Dana and Myron Krueger. Washington, D. C.: American Forestry Association, 1958, pp. 303. $4.50.

This publication has resulted from a commitment made by the American Forestry Association in its 1954 "Program for American Forestry." The original proposal was for Congress and for the governors of each state to undertake these studies through appointed committees, "to consider a desirable pattern of ownership of federal, state and private . . . . lands . . . . to formulate policies to guide action of public agencies toward achieving this pattern . . . . and to recommend to the Congress legislation to implement these policies."

Since the AFA did not get Congressional backing for its proposal (some felt it bore too direct a relationship to some of the planks in the 1952 Republican platform advocating "return of the federal lands to private ownership") its Directors decided to go it alone. Formal cooperation of the federal land management agencies was withheld on the grounds that federally owned lands were not an intrastate problem and could not logically be studied within the narrow framework of a single state's boundaries. Two outstanding former forestry school deans are the authors. Assisting them was a committee representing different forest ownership users and groups. Two well-attended hearings brought out local viewpoints and problems.

This far-western state was chosen apparently because it contains both a high proportion of forest land (43%) and a very large proportion of federal ownership (53%). Its commercial forests make up less than half of the forest land but contain 360 billion board feet of standing timber. The book contains an historical description of the present origins of forest land ownership together with currently available statistical data.

Little analysis of each class is attempted nor are the important conflicts in land uses such as livestock vs. forestry given attention. While some problems presented by different forms of land ownership are well described, the particularly delicate ecological balance found in California's Mediterranean climate is almost entirely overlooked. Continuous forest cover which has been found to be essential in assuring watershed productivity in Mediterranean climates can be maintained only with continuity of tenure under stable administration and enlightened management. California is especially fortunate in having this combination on much of its critical forest watershed lands under National Forest administration.

The report unfortunately concludes with the bland suggestions that more research is needed and proposes a Natural Resources Council to stimulate more studies, to promote cooperation and to advise the Legislature and the Governor on policies, administration and management. The authors make no effort to explain why they recommend the original stated objectives of this study. Specific research problems are not clearly delineated. Nor are generally recognized policy proposals indicated for action.

This reviewer submits that this study, instead of clarifying the problems presented in California land ownership, has attempted to satisfy everyone and in the end satisfies no one. The reader is left in doubt why so much time and effort were given to this study without coming directly to grips with the basic issues.

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Publications Received

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Signs of the Times

An Urban Development Center in the National Capital Region

Definite steps were taken in the early autumn of 1958 to form a Washington Center of Metropolitan Studies, to stimulate research, education and training relating to urban development problems of the National Capital Region. The new organization will be directed by a non-profit corporation, with the participation and cooperation of the seven universities of the Washington area.

The preliminary organizational steps were put into motion by a group of more than thirty educators, businessmen, planning officials and representatives of the public —meeting as individual citizens—at the National Academy of Sciences Building. The Academy acted as host as a public service.

As a result of the informal meeting, these steps were taken: (1) A temporary nine-member board of directors was nominated for the proposed corporation, with the recommendation that it elect officers, proceed with the incorporation of the Center organization, and initiate applications to foundations for its financial support. (2) It was suggested that a permanent board be constituted, and perhaps expanded later to a membership of between twenty-four and thirty members, representing the areas of research and education, of citizens of the metropolitan region, and the national interest in the federal city. (3) It was suggested that the temporary board also consider appointment of a small, permanent staff, and seek space for the activity.

G. Donald Kennedy, President of the Cement Association and member of the Executive Committee of the Highway Research Board, National Academy of Sciences, was named temporary chairman of the board. The other eight members nominated were the presidents of the seven universities of the metropolitan area and Dr. Robert D. Calkins, president of the Brookings Institution. The seven universities and their presidents are: Dr. Hurst R. Anderson, The American University; The Very Reverend Edward B. Bunn, S. J., Georgetown University; Dr. Colgate W. Darden, Jr., University of Virginia; Dr. Cloyd Heck Marvin, George Washington University; The Right Rev. Msgr. W. J. McDonald, Catholic University of America; Dr. Wilson H. Elkins, University of Maryland; and Dr. Mordecai W. Johnson, Howard University.

The idea of the Center of Metropolitan Studies originated with a group of citizen and planning leaders of the area who were impressed by the lack of basic research and knowledge on the dynamic processes of urban development which underlie, and create, the current-day problems of metropolitan area growth. It is the hope and intention of the organizing group that the center will develop and stimulate activities in three directions. They are: (1) To encourage fundamental social science research, applied specifically to metropolitan Washington and its tributary region. (2) Conduct of ad hoc or contract research on problems of immediate social or economic importance to the area. (3) Development of a balanced metropolitan studies program within the metropolitan area universities, including graduate programs, the cultivation of civic leadership, and policy seminars.

It was emphasized that the participation of universities in such studies has already contributed to progress in the solution of metropolitan area problems

in other cities, most notably Philadelphia and Detroit.

It was decided that principal financing for the project should be sought from foundations, with the assurance of cooperation from the several universities of the area. It was hoped that an initial grant of approximately $140,000 be sought from a local philanthropic foundation for the purpose of financing the organization for its initial two years of operation, and that grants of approximately $335,000 should be sought from foundations for the subsequent three years.

National Conference on Highways and Urban Development

More than fifty of the top federal and state highway officials, mayors and other city administrators, housing officials, and civic leaders have formulated a plan for coordinated action to obtain maximum benefits for urban communities from the gigantic United States roadbuilding program. During an unprecedented, week-long National Conference on Highways and Urban Development, (held in October 1958) sponsored by the Committee on Urban Research of the National Academy of Sciences—National Research Council's Highway Research Board, the American Municipal Association—American Association of State Highway Officials' Joint Committee, and Syracuse University, these leaders agreed on the assignment of responsibilities among all the various groups directly concerned.

The conference participants analyzed the tremendous impact that the new roads will have on local communities and their potential beneficial or detrimental effects. The conference made public the following statement of findings and recommendations.

Findings and Recommendations

Findings.

1. In order to meet the urgent needs for highway improvement involving the planning, designing and operation of these facilities, so as to provide the optimum transportation service, and to accomplish the orderly and proper development of our urban communities, it is essential that all units of government cooperate.
2. It is recognized that the fine relationship between the Federal Bureau of Public Roads and the State Highway Departments has done much in implementing the highway program in the state and local communities.
3. Each state highway department has the prime legal responsibility for implementing the state highway programs, including the National System of Interstate and Defense Highways, and its completion within the prescribed time.

Recommendations (State Level).

1. The state highway departments should be organized and properly staffed to work cooperatively and effectively with local authorities in planning, designing and construction and operation of streets, highways, and expressways in urban areas.
2. The state highway departments, in cooperation with the local governments, should develop a tentative program of highway improvements, including the urban areas, for a period of at least five years in advance as a basis for planning at the local level. This program should be in accordance with a jointly-agreed-upon, long-range plan.
3. The state highway departments should consult with the local authorities on a continuing basis in highway planning.

4. In the event that community planning is not achieved by local government, the state should take the responsibility for initiating planning.

Recommendations (*Local Level.*)

1. The local governments should fulfill their primary responsibility for community planning needed to insure the maximum benefits to the local area from the highway program.

2. The local governments in fulfilling their responsibility should take the initiative for the preparation of a comprehensive plan for the physical development of the community. This should include a land use plan, a transportation plan including public transit, and a program of land use controls. To achieve the above objective, urban areas should have continuing competent planning service.

3. Regional planning should be initiated in every metropolitan area.

4. Local governments should consult on a continuing basis with its state highway department in the preparation of comprehensive plans for urban areas.

5. If legislation is lacking to enable proper planning on a local metropolitan or regional basis, the state and local governments should join to have such legislation enacted.

Recommendations (*Joint*).

1. All levels of government should strengthen their support of city and regional planning. All federal agencies dealing with urban development should continuously review their policies to achieve coordination with state and local objectives in urban development and transportation.

2. Public support and adequate finances are essential for the implementation of the desirable programs based upon comprehensive planning. All agencies of government should seek this support through the presentation of all facts relating to the plans.

3. To provide the basis for transportation and broad community planning all agencies concerned should promptly undertake studies and surveys to develop the necessary basic facts, using the appropriate techniques. In the area of transportation planning the Guide and Manuals of the National Committee on Urban Transportation offer excellent procedures for the assembly and analysis of needed data.

4. Steps should be taken to disseminate examples of successful application of techniques and achievement in coordinated urban development. This should be accomplished through the American Municipal Association, the American Association of State Highway Officials Joint Committee on Highways, and other interested organizations.

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